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FEBRUARY 1954 • Vol. 29, No. 2

Table of Contents on Page 2



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**Boies—Fundamentals of Otolaryngology**

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# Table of Contents

Vol. 29

February 1954

No. 2

## ARTICLES

Medical Education and the Potential of the Student to Learn —Ward Darley	11
The Cost of Attending Medical School —John M. Stalnaker, Sarah Counts	20
The Role, Problems, Responsibilities and Training of a Hospital Administrator —F. Ross Porter, Wilbert C. Davison	26
Medical School Alumni Associations	33
Modern Teaching of Neuroanatomy —Dwight M. Palmer	38

## EDITORIALS AND COMMENTS

Another UMT Proposal	43
Army's Modified Affiliation Plan	44

## NEWS DIGEST

College Briefs	48
----------------	----

## AUDIOVISUAL NEWS

BOOK REVIEWS	61
--------------	----

## ABSTRACTS AND EXCERPTS

THE PERSONNEL EXCHANGE	69
------------------------	----

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Association Officers, Staff, Committees	4
Calendar of Meetings	8
Index to Advertisers	8

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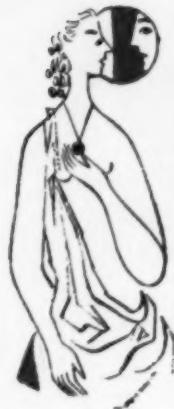
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1. Rumbolz, W. L., Moon, C. F., and Novelli, J. C., Use of Protomine Sulfate and Toluidine Blue for Abnormal Uterine Bleeding, Amer. J. Obst. & Gynec., 63:1029, May 1952.
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Aero Medical Association—March 29-31; Washington, D. C.

American Hospital Association—September 20-23; Chicago.

American Academy of Forensic Sciences—February 25-27; Chicago.

American Academy of Occupational Medicine—February 11-12; Richmond, Va.

American Association of University Professors—April 2-3; Buffalo, N. Y.

American College of Physicians—April 5-9; Chicago.

American College Public Relations Association, Medical Schools Section—June 21-24; New York.

American Medical Association—June 21-25; San Francisco.

American Pediatric Society—May 3-5; Buck Hill Falls, Pa.

American Psychosomatic Society—March 27-28; New Orleans.

Annual Congress on Medical Education and Licensure—February 7-9; Chicago.

Association of American Physicians—May 4-5; Atlantic City, N. J.

Fourth National Conference on College Health—May 5-8; New York.

International Academy of Proctology—April 8-11; Chicago.

International Cancer Congress—July 23-29; Sao Paulo, Brazil.

International Congress of Gynecology—July 21-26, 1954; Geneva, Switzerland.

International Congress of Internal Medicine—September 15-18; Stockholm, Sweden.

International Congress of International College of Surgeons—April 28-May 2, 1954; Sao Paulo, Brazil.

International Congress on Mental Health—August 14-21; Toronto, Ont., Canada.

International Congress on Obstetrics and Gynecology—July 26-31; Geneva, Switzerland.

International Congress of Ophthalmology—September 10-11; Montreal, Canada.

International Congress of Orthopedic Surgery and Traumatology—August 30-September 3; Berne, Switzerland.

International Congress of Psychology—June 7-12; Montreal, Canada.

International Gerontological Congress—July 12-22; London and Oxford, England.

International Poliomyelitis Congress—September 6-10; Rome, Italy.

Medical Library Association—June 15-18; Washington, D. C.

National Conference on Rural Health—March 4-6; Dallas, Tex.

National Tuberculosis Association—May 17-21; Atlantic City, N. J.

Student American Medical Association—May 1-3; Chicago.

World Congress of Cardiology—September 12-17; Washington, D. C., and Bethesda, Md.

World Medical Association—September 26-October 2; Rome.

## Index to Advertisers

Abbott Laboratories	5	Journal of MEDICAL EDUCATION	Third Cover
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Blakiston Company, Inc.	64	W. B. Saunders Co.	Front Cover, 1
Borcherdt Malt Extract Co.	70	Taylor Instrument Co.	10
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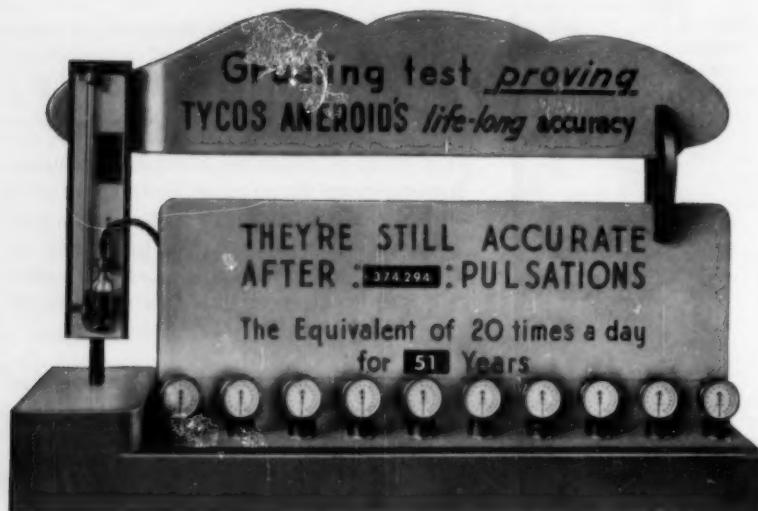
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**References:** 1. *Primer on the rheumatic diseases; prepared by a committee of the American Rheumatism Association. Special article: J.A.M.A. 152:323 (May 23) 1953.* 2. Rammelkamp, C. H., Jr.: *Paper presented at the A.M.A. Clinical Meeting, St. Louis, Mo., Dec. 1, 1953.* 3. Stollerman, G. H.: *J.A.M.A. 150:1571 (Dec. 20) 1952.* 4. O'Brien, J. F., and Smith, C. A.: *Am. J. Syph., Gonor. & Ven. Dis.* 36:519 (Nov.) 1952.



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# Medical Education and the Potential of the Student to Learn

WARD DARLEY

THE PAST EIGHT years have witnessed great activity and transition in medical education. They have been exciting years.

They have been years of inventory taking and re-evaluation. Two surveys, one covering education for medicine at the preprofessional level,<sup>1</sup> and the other at the undergraduate level,<sup>2</sup> have been concluded. Four institutes dealing with the teaching of various phases of medicine have been held and more are scheduled.<sup>3,4, 5,6,7</sup> One of these institutes called for and resulted in the detailed redefinition of the aims of undergraduate medical education.<sup>8</sup>

These have been years during which the content, organization and integration of the curricula of many medical schools have undergone critical and careful scrutiny and as a result, many experimental programs have been activated. Teaching tools and methods have been improved. Full-time faculties have increased in size and are better balanced.

Opportunities for research have increased tremendously and research as a framework for teaching has come into its own.

Medical and graduate school en-

rollments have increased and post-graduate and continuing education have become standard activities of almost all medical schools. Many schools have or are obtaining modernized and new facilities. Several schools are being extended from two to four years and several more are starting anew.

Yes, medicine is in transition. Almost any discussion of this transition must refer to the development of specialism, to the fact that the discovery and application of new knowledge is responsible for it and to the effect it has had in enhancing the effectiveness of medical practice and teaching. As each specialty has broken out of the field of general medicine, a new science has been delineated along with it. Since each specialty and its corresponding science has been built around an orifice, organ or system of the human body, the statement that specialism has fragmented the field of medicine, and along with it the patient, is readily understandable. It is also readily understandable that in this process of fragmentation, patients as composite human organisms with personalities as well as orifices, organs and systems, began to be taken for granted by doctors.

It was not until the close of World War II that medical educators began to realize that in their preoccupation

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## *Medical Education and the Potential of the Student to Learn*

with teaching medicine as a group of sciences, they were making a heavy contribution to the impersonalization of medical care. Once this defect was recognized, many medical faculties began modifying their curricula so that the total individual patient was brought back into proper focus.

In the new approaches it is exciting to find many instances where efforts are being made to present medicine against a background of an understanding of general human biology. And interestingly enough, the effort to bring definitive knowledge and concepts of human biology into this background has revealed that our understanding of human growth, development and adaptation leaves much to be desired. As a result we are beginning to see research interest extending more and more into these fields.

These developments in medical education and research are creating renewed interest in preventive medicine, and out of this in turn is emerging the concept of the promotion and management of health. We may now be seeing the beginning of an era when emphasis upon the teaching and preservation of health may at least parallel the emphasis upon the teaching and care of illness. Many of our medical schools are already combining these two emphases in their advocacy of the concept of the continuing care of the individual whether he be in sickness or in health.

While we may find satisfaction in the progress being made in placing the unity of medicine and of the patient back into focus, we all realize that many problems still beset us. We also realize that both progress and problems are not spread uniformly over all schools or even throughout each school. To discuss all of these problems would not be

germane to my purpose, but there is one problem area that I do want to present for your consideration.

### **The Medical Student**

The problem is this: in our enthusiasm for recognizing the significance of the patient as an individual, I feel that we are not giving enough of the same kind of consideration to our students.

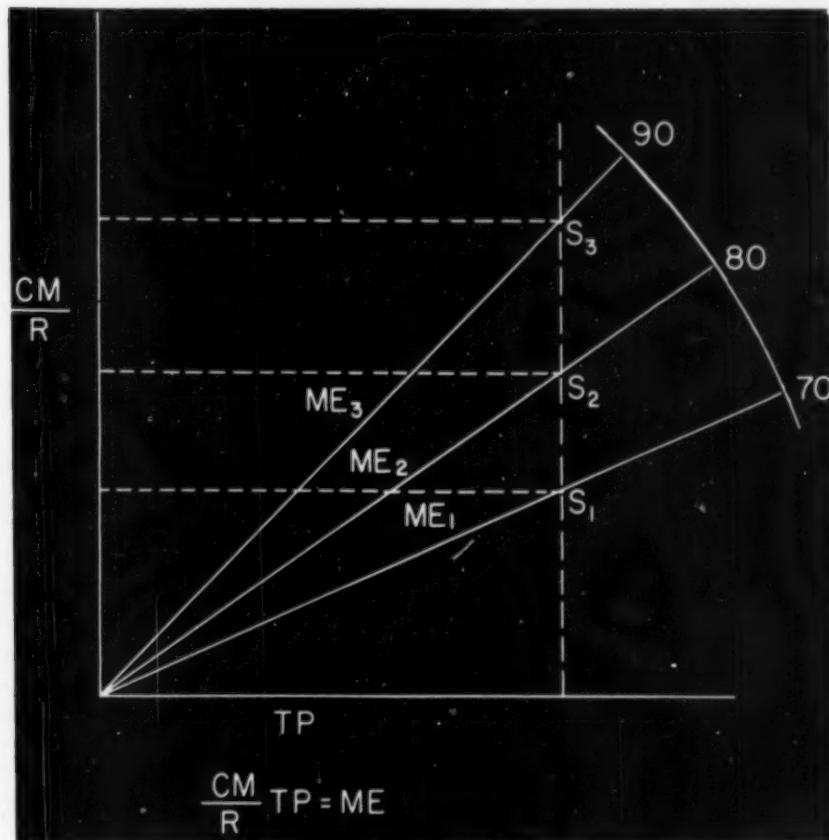
In our preoccupation with curricular reorganization and building up faculties and facilities, we have neglected a personalized approach to the student and continue to think of him in standardized and quantitative terms. In fact, if I may be bold, I would like to emphasize what I am thinking of by reducing the whole scheme of medical education to quantitative terms. The accompanying formula,

$$\frac{CM}{R} (TP) = ME$$

and its graphic transposition (see page 13) will serve to illustrate what I mean.

$\frac{CM}{R}$  is the medical student. C is his intellectual talent and M the strength of his motivation. The interplay between C and M represents his potential for learning. This can be expressed as CM. R represents those factors that interfere or detract from the student's reaching his full potential for learning. The potential for learning will go down or up depending upon the magnitude of these factors; down if the magnitude is great and up if it is small. The relationship of CM to R is therefore a reciprocal

one and can be expressed as  $\frac{CM}{R}$ . The resultant of this relationship,  $\frac{CM}{R}$ , is the student's learning efficiency. Obviously the learning efficiency of



one student need not be equal to that of any other. The learning efficiencies for three students are quantitated along the ordinate of my graph.

The symbol combination TP represents the medical school program without the student. T is a combination of many things: the curricular content and its organization and integration; the number, balance and ability of the faculty; the teaching methods, tools and facilities. This combination is all brought to life or modified by P—the practical service and research situations that serve as frames of reference about which the

student can drape the knowledge and interests that should result from his learning effort. The patient in the hospital, in the clinic and in the home and community is the most important element in P. TP is quantitated along the coordinate of my graph. In any given school of medicine at any given time, TP must be thought of as having a constant value. It represents a common situation which confronts all students alike. This does not mean that the value may not be changed from time to time. When such change does take place, however, it is one that

## *Medical Education and the Potential of the Student to Learn*

faces all students in common so that for any given time the value of TP still remains a constant.

As  $\frac{CM}{R}$  and TP are plotted on the graph, with TP a constant and with  $\frac{CM}{R}$  a value that will vary from student to student, it should follow that the line ME—the "amount" or the "kind" of education that results from

the interplay of  $\frac{CM}{R}$  and TP—will vary from student to student. The lines  $ME_1$ ,  $ME_2$ , and  $ME_3$  represent the educational accomplishments of three individual students. The higher the point at which ME can join the projected value of TP, the greater the accomplishment of the student. A convenient way to represent student accomplishment would be to project the line ME onto a grade scale. I have taken the liberty of doing this and in the instances shown, grade averages of 70, 80 and 90 for students  $S_1$ ,  $S_2$ , and  $S_3$  have resulted. This should make sense, at least to the students, because their standards of accomplishment are such that it is upon grade averages that status satisfactions, eligibility for honor awards and consideration for good internships depend.

Now TP, the educational environment of the student, represents the major developments I have pointed up as taking place during the past few years. These developments have been necessary and they have been important but it is my concern that in our preoccupation with them, we have neglected any corresponding consideration of the student and of his ability to adjust to what we have been doing. In other words, the value of TP may be becoming such that we are throwing it out of reasonable balance with the range of values pos-

sible to  $\frac{CM}{R}$ . Therefore, since maintaining and even improving the value of TP is important, I feel it logical to look to things that will make it possible to improve the value of  $\frac{CM}{R}$

The best way to do this is to avoid circumstances that add to the value of R—to look toward minimizing the factors that interfere or detract from the student's learning efficiency.

I believe that circumstances that add to the value of R begin to develop long before the student appears for admission to medical school. Of particular importance here is the early emphasis upon examinations and grades, which in the case of many students perverts their entire motivation for study and learning. This emphasis continues, even increases, through college, so that when it is added to the competition for entrance to medical school, the objective of premedical education has become, I am afraid, education to get into medical school rather than education in preparation for the study of medicine. This perversion of motivation, plus the competitive situation to which it contributes, cannot help but interfere with the development of sound study and work habits, and the proper balancing of cultural, social and intellectual interests and abilities. Furthermore, it cannot help but block, screen or pervert the ethical and humanitarian impulses that should be behind the desire to study medicine. The fact that this same emphasis upon examinations and grades continues on into medical school does not improve the situation.

Another thing that I think limits the student's learning efficiency has to do with the conglomeration of college credits required for admission to medical school. At my request the

director of admissions, Professor John Little, and the premedical advisor, Professor Norman Witt, of the University of Colorado, recently reviewed the admission requirements for all medical schools. After making careful allowances for alternate and substitute courses, they found that if a single student wished to be eligible for admission to every medical school in the United States, by very careful planning he could do this by acquiring 179 semester hours of credit. At the average pace of 15 credit hours per semester this would require six academic years.

#### Student Anxiety

Once a student has gained admission to the medical school, the standardized and quantitative approach persist: so many hours of this, so many hours of that; departments demand so much of this and so much of that of his time and energy; examinations of so many hours in length; grade averages high enough to permit him to pass from year to year, to graduate and to obtain the best possible internship; courses still taught as independent sciences rather than as correlated parts of general medicine and human biology; rapid rotations every so many days from ward to ward, clinic to clinic and service to service. Along with the segmentation of the field of medicine and of the patient, the student also has been segmented.

A chronic state of anxiety, punctuated by frequent acute exacerbations, is another important factor in increasing the value of R. Part of the underlying chronic anxiety results from the fact that the medical school schedule limits recreational and social outlets. If the student is married, the fact that his wife strongly resents these same limitations greatly aggravates the situation.

As we consider other anxiety-producing factors, we cannot ignore the fact that a large percentage of our students are under great financial handicap. Tuition is now uniformly high and living costs continue to increase. Data regarding the cost and the "how" of financing a medical education from the the student viewpoint are published by the Association of American Medical Colleges<sup>8</sup> in this issue of the Journal of MEDICAL EDUCATION. From a sample of 26 schools it is found that the annual cost for tuition, books and supplies varies between schools from \$400 to \$1,000. Annual living costs, exclusive of tuition, books and supplies, vary between \$1,050 and \$1,750. I feel that these living costs are amazingly low and in themselves reflect the financial straits that face most of our medical students.

Only 23 per cent of the students come from homes where the gross income is \$10,000 a year or more; at the other extreme 29 per cent come from homes where the gross income is \$5,000 a year or less. The number of students receiving significant, non-repayable help from parents cannot be too great. Earnings of wives, gifts and loans from parents and friends, savings and earnings from vacation jobs account for most of the sources of income. The schedule required for a medical education makes it unwise for most students to resort to gainful occupation during the school year and those that do this are simply adding to the value of their own R. In spite of this, 26 per cent of the students hold some job or other during the school year. Almost a third of the students are in debt when they receive their M.D. degree. The contemplation of this hurdle to graduate study and the eventual self-sufficiency of practice cannot help but interfere with learning efficiency.

## *Medical Education and the Potential of the Student to Learn*

Worries other than the payment of debts must not be lost sight of as tension-causing factors: the internship, where? how financed?; military duty, hot or cold? how long?; residency, what specialty? where? how long? how financed?; certifying examination, what if I fail?; practice, when? where? how?

So much for the chronic state of anxiety that can add to the value of R. Acute situations frequently aggravate this chronic state. These can be listed somewhat as follows: the adjustment between college and medical school; final examination weeks; the adjustment between the sophomore and the junior years; the first clinical responsibility; comprehensive examinations; and at home—illness, the birth of children and often the relocation of place and space to live.

I am not so naive as to advocate four years of medical school completely free of anxiety. Anxiety is something that we all must learn to handle and the physician, in addition to learning to handle his own, must learn to handle it in others. But it is my feeling that an undue amount of anxiety is generated in the course of acquiring a medical education and that this in turn is a very important factor in limiting the learning capacity of our students.

There is one more factor to consider. Anxiety and hostility are closely akin. Hostility, like anxiety, also can and does contribute to the value of R. Many students harbor strong feelings of hostility because they feel that they are, to use their own expression, "forgotten men." "The top faculty are preoccupied with their research," they say, "with their graduate students, their residents, their private practices, their national societies and committees." Committee work within the school and the teaching demands of nursing, dental and

other nonmedical students water down the attention the medical students feel is their due. Their doubts, fears, beliefs, ideas, criticisms and questions are not brought to the attention of the faculty as they should be. The students do not think they are given enough consideration as individual people.

I have said enough to let you know what I mean by R and the part it can play in reducing the value of  $\frac{CM}{R}$ .

I realize that in many quarters there is talk and even activity that is aimed at reducing the value of R, but as one surveys the entire field of medical education, there is much that remains to be done in this regard. I suppose that what I have said may be very irritating to many persons. I think I would be one of these if it were not for the fact that, some time ago, Dean Robert C. Lewis and I spent an evening with a random group of our own students. These students quickly dispelled any idea that they were the contented people that we had previously thought or hoped they were. Those of you who are enjoying feelings of complacency about the part anxiety and hostility are playing in the value of R in your own student groups should not bask in this feeling until your students have given you proper reassurance.

### **Selection of Students**

My address would be incomplete if I did not call attention to the fact that the value of  $\frac{CM}{R}$  will be increased in those students fortunate to possess the greater values for CM. The probability that students with great potentials for learning may be passing medicine for other fields is not idle speculation. A recent survey done by

Wolfe and Oxtoby<sup>10</sup> indicates that although all areas of graduate education draw top quality students, medicine definitely draws fewer than does Ph.D. work in most other scientific fields. The score of the top 10 per cent of the students on the Army General Classification Test scale for medicine was only 145, whereas the top 10 per cent scores ran from 150 to 163 in engineering, chemistry, natural science, earth science, physical science and psychology.

Other evidence that points up the probability that medicine is not enrolling the caliber of students that it should is the large number of students each year who drop out of school. The Council on Medical Education and Hospitals of the American Medical Association reports<sup>11</sup> that for the academic year 1952-53 incomplete returns from 71 of our 79 medical schools show that more than 700 students dropped out of school. Poor scholarship accounted for over half of these dropouts. Three hundred and fifteen were from the freshman classes, 201 for poor scholarship. This number of 315 freshmen is equal to the first-year classes of four average-sized medical schools and my guess is that when complete returns are in this will be increased to five. This means that as far as undergraduate medical education is concerned, this nation is receiving the full benefit of only 74 or 75 of its 79 medical schools. Almost every dropout represents a spot that could have been filled by someone who could have made the grade. This reflects a financial loss that is considerable and a loss in physician manpower that is tragic.

I realize that the prevention of all dropouts would be an impossibility, but just the same I cannot help but feel that if our selection methods and practices were what they could and should be, we would do a better

job of picking students with C and M values that would prevent much of this loss. In amplification of this last statement, I would like to say that I believe the geographical discrimination being practiced by most of our state-supported institutions is partly responsible for medicine's not getting the best minds from among the total number of students who apply for admission.

State-supported schools largely limit applications and selections to their respective state residents and, as a consequence, if they fill their classes, must select students with a wide range of learning potential as between excellent to low. On the other hand, schools that do not limit student selection to a geographic area, receive so many applications that it is relatively easy to fill each class with students who are comparable as to learning potential, and this close to the upper range of excellence. It is possible then, that the best of those students rejected by the schools unhampered by geographic restrictions are superior to the poorest of the students selected by the schools that are so hampered.

There is evidence to support the above contention.<sup>11</sup> In 1952-53, 131 poor scholarship first-year students were dropped by the state-supported schools (two of 35 schools not reporting) and 70 by those that were privately supported (six of 41 schools not reporting). Percentagewise, the state-supported figure was 3.88 (131 out of 3,318) and the privately-supported, 2.22 (70 out of 3,143). In other words, the poor scholarship freshman dropout rate for the state-supported schools was one and three-fourths that of the private schools. The effectiveness of medical care is now such that the supply of able physicians is a matter of national as well as local concern. Each medical school,

## *Medical Education and the Potential of the Student to Learn*

therefore, should be looked upon as a national as well as local asset, and our medical school admissions should collectively make it possible for all of the most able of medical school applicants to be admitted, irrespective of their residence.

Any study of the dropout problem should go far beyond the limit of attempting to answer any one question. The American Medical Association communication,<sup>11</sup> just referred to, lists more than 40 separate reasons for students dropping out of medical school, most of which probably reflect the selection of the wrong persons for admission. In other words, I believe that a careful study of the entire dropout problem will reveal that many students with low C and M values are being admitted to medical school to the exclusion of those with ample learning potential.

The main concerns of my address have been three: (1) the importance of continued improvement of our curricula, our faculties and our teaching tools, methods and facilities; (2) the importance of recognizing those factors that detract from or interfere with the learning potential of our students; and (3) the importance of improving our selection methods and practices to the end that our schools admit students with greater potential for learning than is now the case.

### **Association Responsibility**

Nothing was said about the way in which these things might be done. Herein lies the challenges and tasks that lie ahead—not only tasks and challenges for our schools as independent institutions but for our schools as they are banded together in this Association. In fact, it is my conviction that the leadership and the coordination of leadership necessary

to the needed development that lies ahead are largely the responsibility of this Association. The Association is already well into the assumption of this responsibility.

First, the objectives of undergraduate medical education have been redefined.<sup>8</sup> While no two schools need necessarily subscribe to the same objectives, this carefully considered statement is available and can well serve as a point of reference for any school reorienting its educational program. The scientific and social progress of medicine has now reached the point where such reorientations are very much in order.

Second, the Committee on Student Personnel Practices, through John Stalnaker, has been and will continue to make special studies of various phases of medical education. These studies always are based upon carefully gathered data. Many studies already have been published and many others are scheduled.

Third, teaching institutes, such as the one on teaching physiology, biochemistry and pharmacology just concluded, will do much to improve the teaching of medicine and the orientation of the teaching programs to the personal needs and development of our students.

Fourth, the special study and creative work being done by many of the Association's standing committees have done much to bring the best thinking of our educators to bear upon many of the general problems facing the field of medical education.

Fifth, the gradual shift of membership emphasis of this Association from the administrative officers of the schools to the faculties cannot help but strengthen our approach to the consideration of the really basic problems facing our schools, our faculties and our students. This morning's change in our Constitution

authorizing individual memberships should greatly accelerate this shift in emphasis.

Finally, the Journal of MEDICAL EDUCATION has increased its number of annual issues and its scope of interest. It is now under the direction of an Editorial Board with Dean Smiley as editor. This strengthening of the Journal establishes the chain of communication so necessary if all of the above five activities are to be made completely meaningful.

I take great pride and satisfaction in having been a part of the work of this Association over the past six years. The manner in which the many committee workers, the staff of the Association and the members of the Executive Council have worked as a team has been an inspiring thing to watch.

One final thing that we must all remember is that the effective work of these hundreds of people would not have been possible without the financial assistance which has come to the Association from the China Medical Board, the Commonwealth Fund, the Kellogg Foundation, the Markle Foundation, the Rockefeller Foundation, the Sloan Foundation, the United States Public Health Service and many other agencies and individuals. The most recent grant from the Markle Foundation is one that for some time to come will assure the continued work of the Committee on Personnel Practices and the Journal of MEDICAL EDUCATION. In the meantime, it is to be hoped that the individual faculty membership in this Association will reach the point where our own financial self-sufficiency will be an accomplished fact.

In addition to the relief of financial pressure, the receipt of these grants is comforting because of the confidence which they imply. We must not forget, however, that our accept-

ance of responsibility must go with this extension of confidence. There is much to be done. I am sure that the events of the next few years will reveal that these expressions of confidence will not have been in vain.

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# The Cost of Attending Medical School

SARAH COUNTS and JOHN M. STALNAKER

**W**HAT IS THE cost of medical education to the student? What are his sources of income while in medical school? What is the income of the parents of these students? Answers to these questions were sought by requesting students to complete a one-page questionnaire about their expenditures and income during the 1952-53 school year.

This questionnaire was completed by 6,251 medical students from 26 selected medical schools.\* The study was undertaken to provide some factual data for the many students interested in the study of medicine, for their parents, their college advisors and the various other groups interested in costs to the student of becoming a physician.

## Expenses

On the average, the student spends \$1,500 a year in addition to tuition and fees. Books, supplies and equipment cost \$150 and living expenses amount to \$1,350. Tuition at the schools studied has a median value of \$800, making the total cost for a student about \$2,300 a year, or \$9,200 for the student to complete his four years of medical training. This study

\*See Technical Notes, page 23.

Sarah Counts, Ph.D., is research associate and Mr. Stalnaker is director of studies for the Association of American Medical Colleges.

does not cover the cost of premedical training, internship and residency training, or the cost to the young physician of setting himself up in practice.

As might be expected, the variation from school to school is large. At one school, for example, the students report a median cost (exclusive of tuition) of \$835, while those at another school estimate their annual cost (again exclusive of tuition) at \$1,855. Thus, the students at one school are spending over \$1,000 a year more than those at the other school.

The variation among individual medical students is even greater. One student, for example, the son of a professor earning under \$5,000, is attending the state university at a cash outlay of slightly more than \$300 a year including tuition. He lives at home and does not include an estimate of the cost to his family of his board and room. At the other extreme, one married student, son of a physician who earns more than \$10,000, is spending over \$10,000 a year for his living. Both he and his wife work (at work unrelated to medicine) and he receives some additional income. As a result, his income for the year was more than \$13,000.

Books and supplies range among the schools from a median cost of \$125 at one institution to \$235 at

another. Living expenses also show a wide range from a median of \$650 at one school to \$1,750 at another. The living costs, of course, are directly related to the proportion of the students who live at home and to the number of students who are married. Where a large proportion of students are married, the median living expenses go up. Where a large proportion of students are married and living at home, the living expenses are significantly lower.

About half of the students studied (48 per cent) are single and living away from home. The living expenses for this group range from a median figure for one school of \$950 to a median for another school of \$1,550, with the overall median for all schools of \$1,250.

These reports from the students of their expenditures can be compared with the estimates of the cost of attending medical school made by the administrative officers of the medical schools. The 1952-53 Educational Number of the *Journal of the American Medical Association* gives estimates of the average cost (including tuition) for 77 medical schools as estimated by an administrative officer. These costs range from \$900 to \$4,500 with a median of \$2,000. Information was included in the AMA study for 24 of the 26 schools included in the study being reported in this paper. The range of average expenses estimated by the deans and reported to the AMA for these 24 schools is \$900 to \$3,000, and the median is again \$2,000, compared with a range of expenditures as reported directly by the students themselves of \$1,500 to \$2,800 with an overall median of \$2,300.

Differences between costs as estimated by the deans and those reported by the students were not all in one direction. At 13 schools the

median expenses reported by the students were from \$100 to \$1,000 greater than the average expenses estimated by the deans. At five schools the amounts were approximately equal. At six schools the medians based on student reports were less than the estimates made by the deans by \$100 to \$900.

#### Income

The median total funds available or income reported by the students for the year is \$2,450—over \$100 more than the expenditures reported. More than one-third of the group reported incomes larger than their expenses. For this group, income was approximately \$350 greater than their planned expenditures for the school year 1952-53. More than half the group reported expenses and income about equal. Less than 10 per cent of the students reported an unbalanced budget. In many cases the difference was less than \$100. The median deficit was \$150. Most students having deficits described plans for correcting the situation such as working, obtaining a loan, drawing on savings which they had set aside for later use, etc.

Parents are the most important source of income for the majority of students when both gifts and loans are considered. Approximately three-fourths of the students receive either a gift or a loan, averaging more than \$1,000 a year, usually without interest, from their parents. Parents were the primary or largest source of support for almost half of the students and were the only source of funds for 11 per cent of the students.

Some other sources of income were listed by students. Indeed, individuals reported one to seven different sources for funds, but about 79 per cent of the students had no more

**The Cost of Attending Medical School**

TABLE I  
Sources of Income

	Median amount of income	Median per cent using source	Median per cent using as largest source	Number using as only source*
Vacation earnings.....	\$ 550	73%	10%	41
Current earnings, your own.....	450	26	03	13
Current earnings, your wife's.....	2500	22	18	14
Help from parents (gift).....	1300	59	40	639
Help from parents (loan).....	1000	19	09	72
Loan from school.....	450	04	00	0
Loan from other source.....	700	10	03	9
Savings (to be used this year only).....	450	18	03	13
Independent income.....	550	08	02	39
Scholarship or fellowship.....	550	10	02	2
G. I. Bill.....	1150	12	04	7
Other.....	250	01	00	0

\*Fourteen per cent of the total group reporting had only one source of income.

than three sources from which they obtained money.

Of the group of students studied, some 32 per cent are married and about one-third of this group have children. Approximately two-thirds of the wives of medical students are employed. The median amount of income from this source is \$2,500—a larger amount than from any other single source.

About one-quarter of the students are employed and receive cash payment for their work. A few of them receive some services such as board, room or laundry, which decreases their living expenses. Many working students have jobs which are in some way related to the field of medicine. While some students are employed at the university where they are going to medical school, the majority obtain work outside of the medical school.

Although more students (73 per cent) have income from vacation earnings than from any other source, it is a secondary source in terms of

amount, the median amount being \$550.

Students seem reluctant to borrow money except from their parents. Those who do borrow money, however, make greater use of outside loans than they do of loans from the medical school, even though interest rates for outside loans are generally higher. Some 10 per cent of the students reported scholarships or fellowships aiding in their support.

The remaining sources of income are not important on the average for the total group. Some students use savings, a few have independent income or the G. I. Bill as the largest source, but the majority of students have no income from such sources and the other students receive a small amount from these sources.

Table I presents detailed information of the various sources of income.

#### Debt

About one-third of the medical students expect to be in debt when

they graduate from medical school. The median value of the debt for this group is \$3,500. The range among the schools was large. At one school, 13 per cent of the students expected to be in debt (median \$2,500), while at another school 57 per cent expected a median debt of \$5,500. At every school studied, one or more students expected a debt of more than \$10,000 and these students total 3 per cent of the entire group.

#### Emergency Sources

About 95 per cent of the students reported that they could obtain money for an emergency expense. For one-third of the group, savings could be drawn upon in case of such an emergency. Over half of the group would be able to obtain help from their parents under such circumstances. A few (about 10 per cent) listed miscellaneous sources.

#### Father's Occupation—Parent's Income

The fathers of about one-half of the medical students are engaged in professional, executive or managerial positions. Ten per cent of the group reporting are sons of physicians. The proportion of students whose fathers are physicians varies from 7 per cent at one school to 19 per cent at another. An additional 16 per cent have fathers in other professional work, and executive or managerial positions account for an additional 25 per cent of the fathers. The fathers of about one-third of the students were reported as being at lower levels of business or laborers. The remaining students either omitted this question or reported their fathers were deceased, retired or unemployed.

The reported income for the parents averages approximately \$7,000. This amount also varies significantly

from school to school. For example, at one school 36 per cent of the students report that their parents have an income of less than \$5,000 a year and 19 per cent report that their parents have an income of more than \$10,000 a year. Contrasted with this are the students at another of the schools, 17 per cent of whose parents have an income of less than \$5,000, and 38 per cent who report the income of their parents being greater than \$10,000.

If all schools are considered, 29 per cent of the students report the income of their parents as being under \$5,000, 24 per cent reported income between \$5,000 and \$7,499 and an additional 15 per cent reported an income of \$7,500 and \$10,000. Finally, 23 per cent report an income for their parents of over \$10,000. Some six per cent of the students did not answer this question.

#### Summary

THE AVERAGE medical student today spends some \$9,200 for his four years in medical school. For the average single student, most of the money comes from his parents but for the average married student—and there are many married students today—the chief source of support comes from the earnings of the wife.

#### Technical Notes

Early in the planning of this study, the decision was made to obtain information directly from the students rather than an estimate made by an administrative official of the medical school. While the average student does not keep accurate financial records of his expenditures, it was assumed his estimates would be as accurate as those from any other readily available source.

Consideration was given to the

The Cost of Attending Medical School

THE COST OF GOING TO MEDICAL SCHOOL IN 1952-53

DO NOT WRITE IN THIS COLUMN

1. Name Doe, John 2. Medical School Blake College of Medicine

3. Class Freshman Junior Senior Senior

4. Are you married? No 11. no. number of children \_\_\_\_\_

5. Estimate of expenditures for 1952-53 (July 1, 1952 to June 30, 1953):  
 Tuition and fees (include full amount even though you are receiving a scholarship) \$800  
 Books, instruments, and school supplies 150

Living expenses for yourself and your family if married. This should include your total cash outlay for your living expenses, e.g., board and room, clothing, incidental expenses and travel to and from school. (If you are living with others who provide part or all of your board and room, etc., check here \_\_\_\_\_ Then include only your cash outlay on the line at the right.) 1300  
2250

6. Source and amount of funds to meet expenditures for 1952-53:  
 Vacation earnings 550  
 Current earnings, your own 500  
 Help from parents (gift) 1000  
 Help from parents (loan) 200  
 Loan from school -  
 Loan from other sources -  
 Savings (to be used this year, only) -  
 Independent income -  
 Scholarship or fellowship -  
 GI Bill -  
 Other -  
 TOTAL funds to meet expenditures \$2250

7. If you are employed, please state place of employment and kind of work Technician at Memorial Hospital Laboratory

8. If you are borrowing money, how large do you estimate your debt will be when you finish your senior year? \$4,000

9. What would be your source of funds if you had an emergency expense of over \$100? Additional loan from Parents

10. What is your father's occupation? Mercant - Manage grocery store

11. Approximate gross family income of your parents:  
 Under \$5,000 55,000 to \$7,000  \$7,000 to \$10,000  Over \$10,000

12. If TOTAL estimated expenditures is larger than TOTAL funds to meet expenditures, what plans do you have for balancing your budget? (Please write your answer on the back of this sheet.)

ASSOCIATION OF AMERICAN MEDICAL COLLEGES  
185 N. Wabash Ave. Chicago 1, Illinois

THE QUESTIONNAIRE shown above is a facsimile of the one sent to medical schools which in turn distributed them to their student bodies.

possibility of having individual conferences with a carefully selected sample of students to obtain the financial information needed. This approach was ruled out primarily because the cost in personnel, time and money was not believed justified. The questionnaire approach was believed to be reasonably suited to this type of study although its weaknesses are recognized.

Once the questionnaire approach was decided upon, a further decision was made to limit the questionnaire to a single page and to make student identification beyond school and class optional.

Two pretests (each with the students at two schools) were made before arriving at a final form of the questionnaire. These pretests were of considerable aid in writing clear and unambiguous questions. However, the editing required by the pretests was sufficiently minor that the results from these four schools could be used. The final form of the questionnaire (see page 24) and a cover letter was then sent to 22 medical schools which in turn distributed the questionnaires to their student bodies.

The 26 schools selected to participate in this study are believed to be representative. The selection was stratified so that both state and private schools (13 of each) were included and so as to insure a wide and representative range on the basis of tuition, size of school, geographical region and size of city in which the school is located.

Tuition at these schools ranges from \$100 to \$900 with a median of \$790. Two of the schools have more than 650 students enrolled; two have fewer than 250 students. The median size of the student body is 390. The major geographical areas of the country are all represented; seven schools are located in the northeast,

nine in the north central, seven in the south and three in the west. Eight of the schools are located in large cities with populations of more than one million. On the other hand, five schools are in cities of less than 100,000 population.

More than 10,000 students received the questionnaire and 58 per cent of these students completed and returned usable questionnaires. The variation between schools in percentage of returned questionnaires was large. Ninety-five per cent of one student body completed them, while at another school the per cent returned was 27.

How the results are biased by incomplete returns is not known. However, it is not apparent from the information requested that a selective bias would be introduced. Also, although variation occurred in some schools, approximately equal numbers of freshmen, sophomores, juniors and seniors returned the questionnaire when the entire group is considered.

The data was summarized first for each of the participating schools, and a full report made to that school. Medians and percentages were used. Summary statistics for this report, based on the data from all 26 schools, are in most cases medians of school medians and medians of school percentages. It is believed that these figures furnish the best estimates of typical values and proportions. It should be noted, however, that the terms such as "average" and "median" and "\_\_\_\_ per cent of the students" are based on medians of school values rather than directly on a single distribution of 6,251 individual students. Also, ranges, where cited, are of school medians. The ranges of individual students, of course, are much greater than those cited in this report.

# The Role, Problems, Responsibilities and Training of a Hospital Administrator

F. ROSS PORTER and WILBUR C. DAVISON

PRIOR TO 1927, the majority of hospital administrators—46 per cent of whom were physicians, 22 per cent laymen and 28 per cent nurses or sisters—had drifted into this field without adequate training—physicians moving into administrative posts from internships, residencies or private practice, and laymen from subordinate or technical hospital positions such as the business office, stores or pharmacy. A few laymen were transplanted directly from business, social work or engineering on the theory that a man who can run a business can run a hospital.

While the education of a nurse or a physician gives an excellent background for understanding the medical functions and relationships of the hospital, it provides little or no training in business management or in the financial and social relationships to the community upon which the ultimate success of a hospital largely depends. The defects of business management commonly observed, particularly in smaller hospitals, include a lack of familiarity

with purchasing, inadequate training in the principles of accounting and financing, and the inability to prepare and present financial or statistical reports. Such defects, even though combined with the best intentions on the part of superintendent and board, spell waste of money. On the other hand, men and women with business experience only too often are unable to grasp hospital policy, or to adapt business methods—as they must be adapted, to the network of medical, personal and community relations which surround them in the hospital.<sup>1</sup>

Although many excellent administrators were developed by this "hit or miss" approach to hospital administration, it was obvious, as Michael M. Davis emphasized in 1929 with the publication of "Hospital Administration—A Career," that trial and error was no longer an adequate method of administrative staffing and that universities and university hospitals, like Duke, had a responsibility to study the role, problems and responsibilities of administrators and to try to train men to fill the job after it was defined.

## I. Role of hospitals and administrators:

(a.) A hospital is a complex insti-

Mr. Porter is professor of hospital administration and superintendent of Duke Hospital and Dr. Davison is dean and professor of pediatrics at the Duke University School of Medicine. This article is adapted from addresses delivered at the second and seventh southern Institutes for hospital administrators, March 22, 1948 and July 17, 1952.

tution, combining medical services, business responsibilities and community relationships, and requires skilled administration to care adequately for the sick and to utilize funds with economy. The growth of hospitals and outpatient departments in the United States during the last 50 years is an outstanding medical and financial phenomenon, even to those who are accustomed to the seven figures of big business. American hospital assets at present are over \$8 billion and their annual expenses exceed \$4 billion.<sup>2</sup> Our current hospital operating budget is \$3,265,000.

In addition to the hospital, which provides bed care, the administrator is responsible for the outpatient service for ambulatory patients. Formerly called dispensaries because their chief function was the doling out of medicine to the poor, outpatient departments have become one of the chief adjuncts of hospitals and of public health services unattached to hospitals.<sup>1</sup> With the shift in the type of hospital population of medicine, psychiatry and pediatrics,<sup>3</sup> due to better ambulant care, the outpatient clinic has become the more important service by far, especially in teaching hospitals.

(b.) *On the financial side*, it is commonly said that the typical hospital has the responsibilities of a business but the characteristics of a philanthropy. The hospital resembles a business enterprise in several respects but differs from the ordinary business because its usual goal is not profit but self-support, and because it is not a competitive undertaking. Thus, it is more like one of the business departments of government. The underlying motive is, or should be, a combination of economy and service. Waste should be prevented so that every dollar shall buy its full

measure of patient care. The value of any plan or method of business management in the hospital is ultimately to be judged by what it contributes directly or indirectly to the patient.<sup>1</sup> This policy places the hospital administrator in a constant dilemma. He must keep operating expenses at a minimum and medical service at a maximum. If he can save one cent per patient-day he reduces the annual expenses at Duke Hospital, for instance, by \$1,708.77 (170,877 patient-days), but will that economy raise the present excellent case mortality of 2.4 per cent? No one knows the optimal cost.

When should the administrator and medical staff decide that the cost of the prolonged care of a patient in an iron lung or the repeated admission of children suffering from lye strictures are denying needed hospitalization to some patient with an acute and remedial condition? There are those who apparently think that to every hospital problem there is one correct answer which may be obtained from some authoritative source—as school children find answers to arithmetic examples in the back of the book. The first call on the administrator is not to look up answers but to know how to solve problems. He also must be taught how to recognize problems, to analyze them and to determine what facts are needed to solve them; how to get the facts and how to utilize them.

## 2. Problems and responsibilities of administrators:

(a.) *The problems* are not only numerous, but new ones are constantly arising. For example, Blue Cross hospitalization made it necessary for administrators to study risk and risk-sharing. Foundation, town, county, state and federal assistance

## *The Role, Problems, Responsibilities and Training of a Hospital Administrator*

to hospitals has necessitated more accurate cost accounting.\* The use of radioisotopes and nuclear energy requires the employment of health physicists to protect the staff and patients.

Medical research has grown to such an extent that it affects hospital costs.<sup>4</sup> Obviously research is necessary to good medical care in order to stimulate the staff,<sup>5</sup> but equally obviously there is a point at which an administrator must decide whether the research is of more value to medicine in general and to society than to patient care and should be supported by outside funds and not be included in hospital costs.<sup>6</sup> An administrator in a teaching hospital also must decide what part of the medical school problem should be included in hospital costs for while there is no doubt that the students and teachers contribute greatly to the efficient care of patients, there is also a point at which this service is of more value to the medical school than to the hospital. Two hundred and thirteen hospitals in the country have direct affiliation with medical schools, and with 900 additional hospitals, provide instruction for 9,278 approved internships and 20,257 residencies. To develop and maintain a satisfactory relationship with the practicing profession of the locality

is one of the important responsibilities of hospital management. To fulfill this responsibility means not merely to benefit a certain number of physicians, but the whole community as well. The education of physicians and nurses centers in the hospital and the outpatient department.<sup>7</sup> (Parenthetically it should be stated that contrary to popular opinion the cost of operating a teaching hospital is no greater than that of others, when the standard of medical service is considered.<sup>8</sup>)

Hospital social service departments must be expanded to meet the growing realization that hospitals as well as physicians must regard a patient, not solely as the site of a disease, but as an individual and a member of the community with many other problems in addition to his disease which need advice and adjustment.<sup>9</sup> The accumulation of medical records has required trained librarians, IBM machines and microfilming equipment. These are but a few of the many hospital problems which an administrator must be trained to meet, and the following description of the charity program, the flat hospital rate, the shortage of nurses and intrahospital relationships are four examples of attempts by the Duke administrators to meet their responsibilities.

(b.) **Charity** is one of the essential virtues of physicians and hospitals but the public abuses it in dealing with hospitals even more than in its relations with the medical profession. For example, a few years ago a well-dressed man entered Duke Hospital with the statement that he had heard that Mr. Duke had left \$4 million for charity and that he had come to collect his share. In 1932, F. Vernon and F. Ross Porter, the administrators, found that more than 90 per cent of the patients were not paying any-

\*Town, county, state and federal governments are increasingly assuming responsibility for the care of indigent patients and the administrator must get along with many politicians. Hospitals can no longer rely on endowments and gifts to carry the charity load, and at the present levels of hospital costs, "profit" on private patients cannot be expected to pay any appreciable part of the ward patient's bill. Administrators must seek better financial relations with communities and must educate the public that it has a responsibility to pay the full cost of the care of indigent patients. This phase is particularly important at the present time with the changing viewpoints in the Department of Health and Welfare, Public Health Service, Children's Bureau and other government agencies. Gerald G. Gross' "Washington Report on the Medical Sciences," the Kiplinger "Washington Letter," and the AMA pamphlets, as well as hospital journals are required reading for the Duke administrative interns.

thing and they clearly demonstrated that most of them could pay something, though usually not the full cost. They therefore notified the public through the newspapers in this and surrounding states that after April 30, 1933, no free patients would be admitted, but that as charity begins at home, if the patients' friends, church, lodge or country welfare department would pay half the cost, Duke Hospital would furnish the balance in accordance with Mr. Duke's plan that the Duke Endowment and the community should share the charity load rather than either carry all of it.

Nearly all of the counties soon cooperated with the plan. In 1951, for example, 55 per cent of the patients paid less than cost but by having them contribute in accordance with their means, Duke Hospital, with the same amount of money, helped 15,000 patients annually to be treated instead of giving complete charity care to 4,000. Under this cooperative plan which was unique for teaching hospitals, the patients who needed charity care got it for they had been investigated by their home folks who were putting up half the cost. The extension of social service and welfare facilities helped greatly in solving this charity problem by distinguishing between the needy and the dead-beats and also by arousing local interest in the care of the indigent sick. The counties know their poor, and should help in providing medical and hospital care for them. So long as the physicians and hospitals carry the load without murmuring, the public will let them and in addition may abuse the privilege.\*

(c.) *The inclusive or flat hospital rate* also was adopted in 1933. This replaced with a single charge the usual room rate plus an indefinite number of extra charges over which

the patient had no choice nor control. The hospital sold the patient a day of complete hospital service rather than a room, meals, nursing and a long list of separately-charged-for items. The daily charges were weighted to place the maximum rate on the earlier days of the stay when the laboratory and other service were used more extensively. This flat rate made it possible to estimate in advance the probable charges for hospitalization so that the bill could be adjusted to the patient's resources. This policy of basing the rate upon the amount the patient can pay, rather than on the actual cost, like a hotel, has enabled many who under the former system unnecessarily were objects of charity to maintain their self-respect by contributing a fixed sum within their means.

As an additional result of this inclusive rate system, the x-ray, pharmacy and various laboratory and procedural divisions of the hospital increased in size and quality and secured lower unit costs. The patient was greatly benefited for there was no test or procedure needful to his medical service which was not given him without extra payment, except for blood transfusions and antibiotics. The inadequacy, which often exists in x-rays, laboratory and special procedures throughout the country, was eliminated at Duke. Naturally the services of its physicians gained remarkably in general effectiveness.\*

(d.) *The shortage of nurses* has caused several hospitals to close some of their wards. Fortunately in 1948, following Virginia's example, F. Ross Porter, Harold C. Mickie and Florence K. Wilson, with the cooperation of the North Carolina Department of Vocational Education and the Durham city schools, organized a program for the training of practical nurses with three months of class-

## *The Role, Problems, Responsibilities and Training of a Hospital Administrator*

room instruction at the Hillside High School and nine months spent in classes and practical training at Duke Hospital. At the completion of this course, the student receives a certificate in practical nursing and is eligible for licensure as a practical nurse in North Carolina. At present, much of the nursing is very well done by these practical nurses, and the Duke Hospital wards have been kept open.

In 1940, an experiment in intensive private duty nursing was conducted on one of the new wards of the hospital. It was successful and largely obviated the need for special nursing by those unable to afford its relatively high cost. This plan had to be abandoned because of the shortage of graduate nurses, but a similar program employing practical nurses is contemplated.

(e.) *Intrahospital administrative, medical and nursing relationships* are a serious problem in many teaching as well as nonteaching hospitals. At Duke, the problem was solved, by establishing a Committee on Health Affairs, which consists of the deans of the schools of medicine and nursing, the superintendent of Duke Hospital and the heads of each of the 10 departments. This committee meets once each month or oftener if necessary, and all school and hospital policies and interdepartmental questions are decided, while anything which requires the action of the trustees is transmitted to the vice president of the university. The function of the deans and the hospital superintendent is that of adjutants to this committee and they do anything and everything which no one else will do and try to carry out the decisions of the committee.

(f.) *To summarize the analysis of the job, the administrative functions in a hospital may be defined as those*

activities which, while not being directly the care of the patient, or research, or teaching, are nevertheless essential to the effective performance of these primary functions.<sup>1</sup>

### **3. Selection of hospital administrators:**

What kind of an individual should be trained for this job which has been sketchily analyzed above? In addition to having the qualities which a medical student and physician should have—namely, honesty, character, intelligence, a good memory, accuracy, application, intellectual curiosity, a liking for people, charity and faith—the ideal hospital administrator should be a good business man as well as an engineer, or at least a good mechanic. Whether he is a physician is immaterial, but a layman is more likely to be able to handle the manifold modern responsibilities of hospital administration. At any rate, the proportion of lay administrators has greatly increased from the 22 per cent of 1927.

The selection of candidates, preferably university graduates with courses in business administration, accounting and economics, is based on the quality rather than the quantity of preparation, and upon demonstrated evidence of intelligence, character, personality and general fitness for administration and leadership. In considering a candidate many sources of information may be consulted, including (1) his curricular and extracurricular record, (2) carefully prepared, confidential appraisals by teachers who know him personally, and (3) the results of personal interviews with members of the administrative staff of Duke Hospital.

### **4. Training of hospital administrators:**

There are innumerable methods,<sup>1,10</sup> but all of them differ in only one factor, namely the ratio of practical

experience to theoretical instruction. It is just as necessary to avoid training a group of hotel managers—although much is owed to the field of hotel management—as it is to avoid training a group of theorists who have no practical "know-how." The Duke training for the administrator, however, centers in the actual job in the hospital more than in the classroom. By the apprenticeship method, various operating techniques are learned by rule of thumb, and under favorable conditions principles are absorbed. The student lives in the hospital as an administrative intern with the medical, surgical and other interns and residents. Practical work in the hospital and the outpatient department is the heart of the training educationally, just as are the clinical years in medicine, case instruction in law, or case study and supervised observation in a school of business. This practical work is under continuous and skilled supervision. Otherwise it is not training, but only hit-or-miss observation.<sup>1</sup> The goal is "an administrator who will lead and coordinate, and be neither puppet nor dictator."

These administrative internships at Duke are two years long and pay a small salary in addition to room, board and laundry. The instruction is practical with responsibility under supervision rather than theoretical. The interns are rotated through seven different assistant administrative positions in the hospital. There are also weekly seminars lasting two hours, two classes lasting one hour each during the week, group journal reviews, problem assignments, institutes, field trips and required reading to encourage the interns to think "why" as well as "how" to do the job.

The interns may register in the graduate school of Duke University,

and receive the A.M. degree after the successful completion of a thesis and 24 semester hours of university courses in various fields. This additional work will add one year to the program. This schedule is constantly being changed to meet the needs of hospitals and to keep pace with the role and responsibilities of administrators. Not the least of the benefits of this plan is the education of the medical, surgical and other interns and residents who are living with the administrative interns, in the problem of hospital management. These young physicians and surgeons have gained an understanding of hospital administration which was lacking in the previous generation, and which has greatly increased the cooperation between staff and administration so essential to the success of a hospital.

#### Summary

The Duke program was inspired, as previously stated, by Dr. Davis' thesis that teaching hospitals should seek keen university graduates who had specialized in business administration, economics and sociology, and appoint them as interns to be trained as hospital administrators. In 1930, when the Duke Hospital was opened, F. Vernon Altwater and F. Ross Porter were the first of these interns. They learned hospital management with all of its ramifications so quickly that they were made superintendent and assistant superintendent, respectively, at the end of two years.

Duke has continued Dr. Davis' training program by the annual careful selection of three or more university graduates. The graduates of this internship have been assistant superintendents and superintendents at Duke Hospital or administrators of other hospitals. These internships for

## The Role, Problems, Responsibilities and Training of a Hospital Administrator

hospital administrators were suspended for the duration of the war because able young men were in the armed forces. Those who were in training at the beginning of the war became officers in the Medical Administrative Corps. On November 15, 1945, the administrative internships were re-established and their number expanded.<sup>5</sup> The demand for administrators trained along these lines is insatiable.

### Conclusion

A study of the role, problems, responsibilities and training of hospital administrators makes it evident that: (1) he must be endowed with special qualifications, therefore careful selection is of the greatest importance; (2) he should have sound training and wide experience, and (3) without these qualifications and education, he cannot successfully administer so complicated an institution as a modern hospital.<sup>1,10</sup>

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## Medical School Alumni Associations

**I**N THE ACCOUNT OF "Medical School Alumni Associations," published below, material is reviewed which we have received from 38 medical schools in response to a request sent out for the Executive Council of the Association of American Medical Colleges.

Undoubtedly there have been some that have not responded, but it is regrettable if less than half of our medical colleges have alumni associations. Just as the programs in our medical schools are different, so are those in our alumni associations. However, it is my judgment that in this area the deans of medical schools have one of their greatest opportunities for sound and forward-looking development of public relations because all the alumni of our medical schools constitute a powerful public relations arm for the interpretation of the problems of medical education to the public at large.

It has been my experience that many physicians of prominence in their communities know little about the activities of their own school or the multiple problems that face medical schools in general. If every medical school through its medical alumni association could keep its graduates in close touch with its own problems, as well as with the ones of other schools in the country, great good could be accomplished. Too often the alumni associations are considered only as a source of fund raising and little attention is given to other important opportunities that can be developed. If our primary objective is to mobilize the latent strength of our alumni for better dissemination of information, it is extremely important that we take them into our confidence. The publications which have been issued both by general alumni associations and medical college alumni associations, afford excellent media for this type of information about our schools.

One of the most important forces for the development of good medical college alumni relations is to do everything in our power to foster the high morale and loyalty on the part of students while they are in medical school. The most important factor is to do a good job in our educational program. This can be supported by the cooperation of the teaching staffs of our medical school and, in many instances, the alumni of our schools can be of great help. In our own institution at Cornell, we have found that bringing first-year students into contact with the work of our alumni association has been worthwhile. In my judgment, even with the multitude of difficult problems with which the deans of our medical schools have to deal, there are not many more important than the cultivation and maintenance of a high alumni interest and participation by

## Medical School Alumni Associations

the alumni group in the support of medical education and its forward development.

The Executive Council of our Association sincerely hopes that each dean will read this article carefully and review the situation in his own school. If you are not doing a good job in alumni relations, give careful consideration as to how you can, for if each of us has the support and interest of our alumni, the work of all of our schools will go forward with better public interest and support.—JOSEPH C. HINSEY, Chairman, Executive Council, Association of American Medical Colleges, and director, New York Hospital—Cornell Medical Center.

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**I**N RESPONSE to a letter, the alumni associations of 38 medical schools answered questions and described the nature of their organizations. Rather than present the material obtained from these answers as a statistical report, it is presented in terms of the various forms of organizations, the types and extent of activities and the relationship of these organizations to the medical schools.\*

For most of the medical schools there is an alumni association which is separate, at least in some respects, from the general alumni association of the university. The degree of autonomy of the medical alumni associations covers the entire range, however, from no separate organization to one completely independent. Some of the intermediate degrees of autonomy and the areas in which the medical associations are dependent upon the larger alumni associations will be described.

One of the most limited patterns of independence is the following. The medical school alumni association has an annual dinner meeting, usually at commencement, but does not have

other activities independent of the general association. The annual meeting of the medical alumni association is held as a part of the university commencement activities. The medical association may have officers who plan this meeting.

At other universities the general alumni association remains as the parent organization, but the medical alumni association has separate officers, operating funds, and a wider range of activities. The operating funds may be allocated from dues paid by medical alumni to the general association or may come from dues assessed by the medical association. The wider range of activities may include the following: (1) planning of an annual meeting which often covers an entire day or several days, (2) fund raising, (3) regular publication of medical school and alumni news in the university alumni publication.

### Autonomic Organizations

Some medical alumni associations are more completely autonomous organizations than either of the patterns described above, although they may be affiliated with the general alumni association of the university. There is a greater number of these

\*This report summarizes the replies received in response to a letter sent by Dr. Joseph C. Hinsey, chairman of the Executive Council of the AAMC, to the medical schools. The report was prepared by Sarah Counts, Ph.D., research associate, under the direction of John M. Stalnaker, director of studies.

independent organizations and the body of this article applies more completely to them.

Membership in most of the organizations is restricted to dues-paying graduates of the medical school. A few schools consider all eligible persons as members even though they may have voluntary dues. Eligibility may be extended to others than graduates, such as present and past faculty and hospital staff graduates of schools which merged with the present school, all former students who have obtained an M.D. (even though at another school), all former students, graduates of veterinary and dental schools at the same university, and interested persons. In some cases these groups are not eligible for regular membership but are designated as associate, affiliate or honorary members.

As stated above, there are different policies regarding the payment of dues. The typical policy is that payment of dues is necessary for active membership; \$5 per year is the usual amount. Some associations have a set amount for annual dues, but specify that payment is entirely voluntary. Others depend upon voluntary contributions for support. Some associations charge a small initial fee and no dues, while others charge their graduates dues but not until five years (or other specified period) after the M.D. was awarded.

Money received from dues is used mainly for office expenses (including the hiring of an executive secretary in some cases), publications and the annual meeting — in other words, regular operating expenses of the association.

Many of the associations have fund-raising activities in addition to the collection of dues. In fact, this appears to be the sole activity of a few associations (others specifically avoid becoming fund-raising organi-

zations). Some of the associations raise as much as \$100,000 a year. Most of the appeals made by the alumni associations are to their membership. A few of the alumni associations act as a general fund-raising group for the school and contact possible sources of funds outside the organization such as individuals, foundations and the state legislature.

#### Association Projects

Fund-raising activities are usually undertaken for the benefit of the medical school and are contributed to the school for use on a specific project. Frequently the purpose is to obtain building funds. A few make annual contributions, either to scholarship and loan funds for students or to the operating budget of the school. Alumni associations making smaller contributions support such projects as a travel fund for faculty attending medical meetings, furnishing a student lounge, buying basketball uniforms, etc.

Some alumni associations have projects of their own as well, for which they raise money. Funds are needed by some for operating expenses (instead of or to supplement dues). Others have special uses for the fund. One association has an "Alumni Doctors' Sick Fund"; another makes awards to its members for outstanding public service.

Another activity of the alumni associations is the planning of meetings for its membership. One type of meeting—the social reunion at commencement or homecoming—is mentioned above. Meetings which are more extensive both in amount of time and number of activities are held by many associations. They may serve several purposes: (1) to inform the alumni of the progress and problems, interests and activities of the schools, (2)

## Medical School Alumni Associations

to offer educational programs (see below), (3) to serve as a business meeting, (4) to be a social function. Any one or all of these may be encompassed into a meeting.

The educational aspects may be in the nature of refresher courses or may be accomplished by presentation of scientific papers. Where refresher courses are given, the meeting is more likely to last several days or even as long as two weeks. Clinic and ward rounds are often interspersed between lectures. Exhibits by the medical school or by commercial firms are planned at some meetings.

The business meeting is usually for election of officers and reports of past officers. A few associations elect their officers by mail rather than direct vote. Note should be made here that the executive committee of the association may meet several times a year or as often as once a month.

The annual meetings are usually culminated by a banquet. Wives of the alumni are invited and the speaker may be a prominent member of the medical school faculty or in many cases is a noted man from outside the field of medicine. Five-year classes have special reunions at many of these meetings; the 25-year and 50-year alumni receive special recognition. If the meeting is held at commencement time, particularly, the seniors are invited to join the association at the banquet.

The preceding material describes types of meetings held (usually only annually) at the medical school. There are two other types of meetings sponsored or encouraged by the alumni associations. Many of the associations plan alumni meetings at state and national medical conventions. These usually serve as social get-togethers and may be either a luncheon or dinner. Development of local associations holding monthly

social or scientific meetings is encouraged by some of the associations. In some cases a faculty member of the medical school speaks at these meetings.

## Publications

Of the associations which have their own publications, there is a large range of extent of publication. Some only send out irregular communications with specific purposes such as fund-raising or the announcement of a meeting. Others at regular intervals mail a mimeographed letter containing news about the medical school and personal news about alumni. More extensive publications are produced by some schools. The following list indicates the range of areas which may be covered in publications:

- Alumni news.
- School news.
- Undergraduates—particularly seniors.
- Scientific papers.
- Professional papers on medical practice.
- Professional papers on medical education.
- Fund-raising and reports on use of funds.
- Announcements of meetings.
- Announcements of refresher courses.
- Directory of members.
- Placement service.
- Book reviews.
- Commercial advertisements.

In addition to contributing funds to the medical schools and holding meetings on their campuses, there are other activities which bring the alumni association and the medical schools in close contact with each other. Several of the associations sponsor undergraduate activities. Examples of this are: (1) one association presents annually a round table on general practice with the aim of acquainting the students with professional problems and practices, and (2) another association sponsors senior scientific sessions at which the

### *Medical School Alumni Associations*

undergraduates present research reports.

The alumni association also may participate in medical school administration. Some serve in an advisory capacity to the school; a few occasionally perform in a liaison capacity between the medical school and the university administration. As mentioned earlier, a few are active in supporting legislative appropriations.

In most cases the annual meeting is held on the school campus and the faculty are active in the program. In some cases the medical school provides office space and secretarial help for the associations. The publication carrying alumni news occasionally is primarily a project of the medical school rather than of the association

and often a faculty member is the editor.

The degree of organization and the extent of activities varies a great deal from one association to another. The organization of the general alumni association of the parent university is one factor influencing this. Other factors, perhaps less tangible, such as personality of the organizers, tradition, etc., probably play an equally important part.

The alumni association can promote an effective interchange between the medical school and its graduates. To develop and maintain a sympathetic and understanding relationship between the medical school and its graduates is the chief function of an alumni association.

# Modern Teaching of NEUROANATOMY

DWIGHT M. PALMER

IT IS NOT UNUSUAL for medical students to think of neuroanatomy as one of the more difficult courses in the preclinical medical curriculum. Similarly, the teacher of this subject frequently reflects on the formidable task which confronts him as he attempts to lead the medical student through the intricacies of the human nervous system.

The author has had 26 years of experience teaching neuroanatomy to medical students, first as an assistant to the late Dr. Francis L. Landacre, and later as the instructor in charge. In retrospect, the things that stand out in this experience are the many increases in knowledge in this field, the inconstant methods of presentation of the subject material and the changing points of emphasis over the years. Perhaps something may be gained by a brief presentation of certain recent viewpoints in neuroanatomy which the author feels should have a definite place in an up-to-date presentation of the subject. Only a limited number of subjects have been selected for discussion here; this essay is in no sense a syllabus of course material for neuroanatomy.

As a general statement of purpose, the author believes that an adequate presentation of neuroanatomy should not just be a mere "mental discipline drill" in minutiae but that it should stress material which has usefulness for the student of medicine. It is

also held that neural anatomy should be presented with functional interpretations and orientations. Structure and function are inseparable and should be taught as such.

## Points for Emphasis in Teaching

*The nervous system is a whole.* It is erroneous to speak of divisions of the nervous system if the use of such terminology implies that there are actual divisions or parts within the system. All evidence indicates that the various body tissues and functions are represented in neural structure in one area of the nervous system, and then re-represented in another region of the nervous system, and possibly again re-re-represented in still another area, and so on. This viewpoint is especially significant with respect to the autonomic or vegetative component of the nervous system which is often referred to as the sympathetic nervous system, and which usually is treated in a separate chapter in textbooks of neuroanatomy. A proper orientation considers the viscera as being involved in many types of reaction systems, some relatively simple and others exceedingly complex. Likewise, it is misleading to state that the striated muscles are controlled by the somatic nervous system or by the sensorimotor division of the nervous system. Rather it is important to emphasize the totality of the nervous system.

This approach is fundamental to

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a true psychosomatic interpretation of the human organism since it serves to bring organs, striated muscles and mental phenomena into a common relationship. There can be no true psychosomatic medicine if mental phenomena are to be considered as unrelated to the nervous system or as the function of a division of the nervous system. Thus, an adequate course in neuroanatomy should serve not only as a preparatory course for clinical neurology but as a basis for all of medicine, including psychiatry.

*The relation of function to structure.* This problem may be summed up as a matter of choice between localization of function in specific structures, large or small, and usually the smallest definable structure, on the one hand; and functional localization on the other. The latter term, functional localization, is used to imply that a given anatomical structure plays a part in a certain function but that other structures also play a part in the same function, and that the particular structure under consideration may also play a part in other functions. Therefore, it cannot be said that there is localization of a particular function in a given structure. Actually, the problem is whether to use a conception of "centers" or one of neural arcs or reaction systems. While it is apparent that there is localization of function in terms of the terminal connections of neurones and of fiber bundles, it is also true that synapses and nuclei are more than mere relays. Therefore, function is to be considered in terms of a series of events occurring along an arc (or arcs) rather than being something that is localized to one point.

It follows that the more complex the function the more widespread becomes its localization, and therefore the less valuable is the conception of

centers. As examples, one may consider the relationship of structure to function in the myotactic reflex on the one hand, and in language function on the other. Here one sees a huge difference in complexity. Even in the case of the reflex, the response is lost both when the afferent neurone alone, or the efferent neurone alone, is removed from the pattern. When the complicated phenomenon of language is examined it can be seen that the conception of speech centers reflects credulity, and that language function must have a widespread functional localization in neurone structure.

*Conduction and/or induction (field affects).* One of the fundamental parts of the neurone doctrine is the concept of conduction by a nerve cell. As just stated, this idea was extended, formerly, to include the notion of conduction along pathways, a viewpoint now considered to be outdated. In any event, one still deals with the conception of conduction along the extent of a threadlike cell. Recent electrical studies, particularly in the area of electroencephalography, have indicated that conduction alone is inadequate to explain all of the neural phenomena which are found. It appears that a parallel mechanism of inductance, or induction, may also take place in active neural tissues. It is probable that this represents a form of electrical field effect. It is possible but not proven that conduction may be the essential mechanism of communication in peripheral nerves and in sheathed fiber bundles, while induction may be operative in nuclei, and particularly in large nuclei as the cerebral cortex. The conception of induction is a new approach in the understanding of the nervous system, and if validated will require a revision of the neurone doctrine.

*The complexity of the synapse.* The modern view is that the synapse is a remarkably complicated structure. Studies have shown that a single nerve cell body may have 800 or more dendritic bulbs. Furthermore, it appears certain that not all of these 800 dendrites are connected to another single neurone. Thus the possibility is introduced that several neurones can influence a single neurone in a vast variety of patterns of excitation. It appears that only certain combinations of influence will result in an impulse discharged by the influenced neurone. Thus, the active synapse may be visualized as something like a gigantic electric sign with bulbs flashing on and off in changing patterns, only some of which have meaning. It has been proposed that the building up of electrical charges on the end bulbs and cell membrane of an influenced neurone may involve a matter of spatial summation in that there must be accumulated a certain pattern of excitation in space and time on the end bulbs and body of the influenced neurone before it discharges. In this manner, spatial summation may determine the timing of impulse discharge in the second neurone.

*The nervous system is an active dynamic mechanism.* The idea that the nervous system is a living but largely passive and inactive bit of machinery, save when some impulse travels through it and lights up a well-defined path from receptor to effector, is completely outmoded. As Brazier states, the central nervous system is "not a mere relay station, which, when unstimulated, is at rest, but a system which is in itself a hive of activity . . ." It is to be considered that the nervous system consists of recurring ("reverberating") patterns of discharging activity—not just living neurone chains, but active, rhyth-

mically discharging looped chains or circuits of neurones which have an inherent self-exciting activity that is independent of environmental stimulation.

*The nervous system is a selector mechanism.* The old conception of "tracing an impulse" through the nervous system must be rejected. The impulse is peculiar and is restricted to a single neurone where it appears as an intermittent all-or-none phenomenon. It is not "conducted" to another neurone nor does it "pass" to another neurone. Rather, the second neurone may or may not discharge its own particular impulse as a result of activity in the first neurone.

It is clear that one neurone may have a connection with more than one other neurone but it does not necessarily follow that every time the first neurone discharges an impulse, all of the related neurones will then become active. In other words, there is introduced the conception of threshold values in reaction systems. These threshold values exist at the receptors, at synapses, at neuromyal junctions, and perhaps even in the metabolism of the neurone bodies themselves.

The nervous system does not consist then, of merely an aggregation of connected pathways along which an impulse travels. Rather, the impulse discharged by one neurone comes up against a threshold, and this threshold has a selector function. The nervous system may be viewed as a gigantic collection of conditioned thresholds which serve to select certain aspects of environmental stimulation.

"Closed loop circuits" and "feedbacks." As a further expansion of the conception of the nervous system as a selector mechanism, there is the probability that neurones exist in circuits that have the nature of

"closed loops." These circuits may be self-exciting and may function as timing mechanisms. This would represent an intrinsic activity of available and unavailable synapses against which afferent (sensory) neurones could discharge impulses. These input signals would find variable conditions at the correlation level as represented by synapses in the self-exciting "closed loop" circuit. At times the synapse tapped into by the afferent pathway would be available for the incoming discharge to activate a unit of the circuit; at other times the synapse would be refractory; and at still other times the afferent discharge might exert a polarizing but not a discharging influence on the neurone of the loop circuit. Thus, the "closed loop" circuit, by its timing, would exert a selector function on incoming discharges.

Certain closed loop circuits may receive afferent discharges from active muscles in what is called a feedback arrangement or servo-mechanism. It is probable that the proprioceptive fibers are links in such mechanism. As muscles contract, information is fed back against "closed loop" circuits which may also be concerned with the timing of the pre-motor discharges to the lower motor neurones. This feedback and closed circuit arrangement can be used to explain goal-directed muscle activity and the termination of a muscle contraction short of the mechanical limitations of the muscles and bones.

*The thalamocortical projections.* Increasing attention is being paid to several aspects of the connections between thalamus and cortex. There are also fibers from cortex to thalamus (which probably complete loop circuits) but in this discussion only those from thalamus to cortex will be emphasized. There are three points of interest in this connection.

First, it is important to note that while these thalamocortical connections are widespread, much of the temporal lobe cortex is almost entirely without thalamocortical projections. The apparent isolation of this particular cortex from the diencephalon may be significant in terms of Penfield's claim that it is "memory cortex."

Second, the medial nucleus of the thalamus projects to the cortex anterior to the central sulcus of Rolando, while the lateral nucleus projects largely to cortex that is posterior to that sulcus. This arrangement may fit in with the conception that the frontal lobe-medial nucleus mechanisms is concerned more with the extension of drive, interest and attention into the future, and with forecasting and planning; while the lateral nucleus-posterior cortex mechanism is concerned more with the analysis of the present situation on the basis of accumulated conditions from the past. These two mechanisms are in no sense separate, and the existence of intrathalamic, intracortical and looped cortico thalamic-cortical connections may be considered as evidence of the structural aspect of the oneness of this mechanism.

Third, there is considerable interest in the possibility that there are two parallel sets of thalamic projection fibers to sensory cortex (Magoun, et al). One of these sets of fibers represents environmental content about to be screened as knowledge, while the other set is postulated to be concerned with the regulation of a level of awareness.

*Cortical areas of localization.* Since Brodmann published his topographical map of the cerebral cortex in 1909, his work has exerted a strong influence in neuroanatomy. More recently, however, there has been the feeling that mapping of the cortex

has been overdone, especially since there has been a tendency by some workers to associate a particular function with each new topographical area that was described. It has been suggested that more accurate interpretations might result if the cortex were subdivided on the basis of its thalamic connections (von Bonin). This form of subdivision would have to be viewed against a background of three varieties of cortex-archicortex, paleocortex and neocortex.

*The nature of the archicortex.* Increasing attention is being paid to the possibility that the archicortex may have important functions of a generalized nature, and in the area of what may loosely be called emotion or feeling tone. It seems rather certain that this cortex is not concerned exclusively with olfactory function (Brodal). The fact that workers such as Papez have been able to describe loop circuits which link this cortex with both the diencephalon and the newer cortex may indicate the importance of this region in the integration of the affective and discriminative aspects of thinking and behavior. It has been suggested that such circuits may provide the mechanism for extending emotionally-colored muscle and gland behavior in time.

*Scanning mechanisms.* It has long been noted that nerve cells often appear in layers, as do the fibers; that fibers often take very straight courses; and that cells are often accurately spaced in rows. Examples are easily found in the arrangements of the Purkinje cells and the longitudinal fibers of the granule cells in the cerebellar cortex and in stratifications of cells and fibers of the cerebral cortex (notably visual projection cortex—Brodmann's area 17), as well as in the superior colliculus, the lateral geniculate body, etc. It is quite probable that these exact and peculiar

arrangements have meaning in terms of spatial screens. It is also possible that these screens may be "scanned" by a process similar to that which occurs in the transmission of the television picture. For example, the scanning wave may summate with the input signal as it arrives in the sensory projection cortex, and this may result in a selective discharge into sensory association cortex on the basis of this summation.

#### Summary

Some of the more recent advances in interpretation and in manner of presentation of the subject of neuroanatomy have been briefly presented. This area of instruction is far from a dead subject and teaching which utilizes the most recent advances in our knowledge will provide the medical student with basic information of increasing usefulness.

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## ***Editorials and Comments***

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### **Another U. M. T. Proposal**

**O**N DECEMBER 14 the National Security Training Commission issued a statement to the press entitled "20th Century Minutemen." If that statement represents the main findings of the commission as given in the report submitted to President Eisenhower on that date it would appear that the thinking of this group is going to contribute very little to the clarification of the muddled military draft and reserve situation.

What the commission urges is that of the 7,300,000 young men reaching age 18 during the years 1955 through 1960, 63.5 per cent (4,625,000) should go through the regular two-year draft, and 16 per cent (1,175,000) through a new six-month training course. The other 20.5 per cent (1,500,000) presumably would be rejected as 4-F's.

The draftee could volunteer for immediate duty or wait for his draft call. If he were in college when the call came he would be allowed to finish the current year and if he were in the college ROTC and had agreed to serve two years on active duty he would be deferred until he had graduated and received his commission. He would not, however, be permitted, as at present, to obtain further deferment for graduate or professional training. After his two years of active duty, he would be required to spend only one year in the Ready Reserve. He would also have G. I. rights to education aid, insurance, hospitalization, home loans, etc.

The trainee would be permitted to finish high school (before age 20) or the current year in college. He would then undergo six months of training supervised by the National Security Training Commission, with pay at about \$30 a month. After the six months of training the trainee would serve for seven and one-half years in the Ready Reserve and hold himself ready for call to active duty on 30 days' notice. The trainee would have no veterans' benefits.

Each young man on his 18th birthday would go to his draft board, register and draw lots to see whether he would go into the regular draft "service pool" or into the newly proposed "training pool."

It would appear that the commission has been so intent upon making the military requirements for our youth *fair* that it has lost sight of the even more important matter of making them *efficient*. Assistant Secretary for Defense John A. Hannah has already questioned the assumption that U. M. T. trainees with only six months of training would be valuable in case of sudden war.

For young men planning on the study of medicine these proposed alternative programs would offer only a Hobson's choice and even that would be settled by lottery. The draft alternative would delay the student's entrance into medicine by two years and almost certainly he would have to serve twice, once as a student and once as a physician. The trainee alternative would delay the student's entrance into medicine by six

months and then possibly interrupt his medical course in the succeeding seven and one-half years.

If the government wishes to have the maximum supply of properly trained physicians available for military call in time of emergency, it would do well to interrupt the course of doctors in training (three to four years of arts, four years of medicine, one to four years of internship and residency) as little as possible.

### **Army's Modified Affiliation Plan**

**O**N JANUARY 19, 1954, the Office of the Surgeon General issued the following release:

"More than 50 medical colleges and large civilian hospitals throughout the United States have entered into an informal agreement with Maj. Gen. George E. Armstrong, Army Surgeon General, whereby each will furnish a limited number of highly qualified doctors and dentists for key specialist assignments in a 1,000-bed general hospital for employment only in time of a major national emergency.

"This agreement is a modification of the reserve hospital plan used in World Wars I and II, under which a formally organized group was required to conduct military training and secure a full complement of commissioned officers. The modified arrangement permits the hospital or medical school to retain these key professional staff members, selected for the unit for several months following the initial impact of the emergency. These personnel would not be required until after the reserve hospital units had been called to active duty and the administrative and house-keeping personnel organized and trained.

"The modified affiliation program interferes in no way with the traditional establishing of reserve hospital units by those institutions desiring to do so. In fact, a school or hospital may have both types of participation in the Army's plans for medical national defense. Members of school faculties or hospital staffs who wish to continue in reserve activities at those institutions where only the modified affiliation program exists, may associate themselves with a local Reserve Troop Program Unit or join the Medical Section in the Reserve School. The modified affiliation units will be members of the Army of the United States. The Adjutant General of the Army has reserved the numbers utilized by the sponsored units in previous conflicts for re-issue as appropriate.

"Experience in World Wars I and II and the Korean conflict has shown that professional specialists need only short periods of military instruction before engaging in their primary Army duties," said General Armstrong in explanation of the modified affiliation program.

"Although the program followed in those wars and in Korea was generally satisfactory, budgetary restrictions, mounting overhead costs, lack of space, shortages of personnel in certain categories, and increased civic responsibilities imposed on both hospitals and staff members were among the major factors that brought about the new plan.

"At the time the Army activates the headquarters and administrative complement of the modified affiliation unit for training in military procedures, the institution would be requested to supply only a chief nurse and one other nurse, two Medical Corps captains and one Dental Corps captain and one dietitian first lieutenant. Several months later the institu-

tion would be asked to select members of its professional staff and have them prepare applications for commissions in the Army of the United States. The appropriate Army commander would process the appointments, publish necessary orders and arrange for required military indoctrination so timed as to allow these officers to join the unit by the target date.

"The colleges or hospitals in this 'gentlemen's agreement' will not be required to provide a formal organization, appoint officers or agree to conduct training programs in order to be accepted in the plan. The modified affiliation plan, however, does not permit an officer to use it as a basis for military deferment if he should be called separately for active duty prior to the activation of the sponsored unit."

This appears to be a sound and practical plan meriting careful consideration by every medical school in the country.

# NEWS DIGEST

## **Yugoslavian Penicillin Plant**

The first penicillin plant to be equipped by the United Nations Children's Fund has recently started production in Belgrade, Yugoslavia. UNICEF provided \$90,000 worth of basic production equipment for modernizing this plant, which is now under the guidance of the UN Technical Assistance Administration.

A portion of this plant's production will be used to continue the village-by-village attack on endemic syphilis, which has been aided by the fund since 1950.

Two other plants, in Chile and India, are receiving UNICEF aid, and production is expected to begin later in the year. In addition to treating the countries' own children, production will be used to fight yaws in neighboring regions. The Indian plant, first in Southeast Asia, will also train penicillin technologists for underdeveloped areas. To set up all three plants, the governments have committed over \$5,500,000 while UNICEF's contribution was \$1,225,000.

## **New Atomic Accelerator**

The U. S. Atomic Energy Commission has approved design and construction at Brookhaven National Laboratory, Long Island, of an ultra-high-energy particle accelerator for nuclear research. This alternating gradient synchrotron will be designed to produce beams of protons of energies ranging up to 25 billion electron volts, the most powerful constructed.

The cost of design and construction, which will take five or six years, is estimated at \$20 million. As higher energy levels have been reached in laboratory machines, new nuclear phenomena have been observed, so that this machine is expected to contribute important new knowledge of the fundamental nature of matter.

## **Heart Handicapped Farmers**

Work has begun on the first United States research project to determine methods for easing the work load of farmers with heart disease. An American Heart Association affiliate, the Indiana Heart Foundation, is joining with Purdue University and the Indiana State Board of Health in financing a \$130,000 five-year study on time and energy-saving shortcuts for the farmer with heart disease.

Dr. Lowell S. Hardin, professor of agricultural economics at Purdue, and Dr. M. X. Zarrow, professor of physiology, are directing the project, which will be conducted in Purdue laboratories and Indiana farms.

The studies are expected to lead to programs for the farmer along the lines of rehabilitation and counseling facilities now being developed for the industrial worker. Dr. Hardin suggests that new methods of work, and possibly new design of equipment, farm buildings and machinery might also result from the information obtained on energy requirements of farm work.

## **Public Health Service Grants**

The Public Health Service has approved awarding of 651 medical research grants for a total of \$6,428,435 on recommendations of advisory councils to the National Institutes of Health. Cancer research received the largest allocations, with \$2,055,155 going to support 215 projects. Grants were proportioned to other fields of research as follows:

Arthritis and metabolic diseases, 67 projects totaling \$606,031; neurological diseases and blindness, 49 projects totaling \$441,312; dental, five projects totaling \$20,342; microbiology, 64 projects totaling \$579,060; heart, 93 projects, totaling \$1,058,636; mental health, 67 projects totaling \$845,936.

### **ACPRA Meeting**

The fifth annual meeting of the Medical Schools section of the American College Public Relations Association will be held at the Roosevelt Hotel, New York, on June 21-24.

Six panel sessions have been planned, including (1) the role of public relations in a medical school as seen by the dean; (2) discussion of news stories by four medical writers; (3) medical school publications; (4) lessons learned from handling big stories in medicine; (5) the role of fund-raising and development in the public relations program of the medical school; and (6) a report of the Association of American Medical Colleges with particular reference to public relations. Medical school faculty members who perform public relations functions are invited to attend.

### **Toothache in the Sky**

At 30,000 feet, travelling some 300 mph, the least of an aviator's problems should be his teeth. But Dr. Floyd A. Peyton, professor of dentistry at the University of Michigan School of Dentistry, indicates that aerodontalgia, or toothache at high altitudes, is a serious dental problem of the near future.

Studies have shown that a diseased tooth, repeatedly subjected to high altitudes, may decay faster. In addition, dentures have been known to drop into the laps of airmen, and research indicates that at 30,000 feet there is as much as 50 per cent loss of retention of dental plates.

### **AAC Director**

Dr. Theodore A. Distler, formerly president of Franklin and Marshall College, Lancaster, Pa., has been named executive director of the Association of American Colleges. He succeeded Dr. Guy E. Snavely, who held the position for the last 17 years. AAC membership currently includes more than 700 universities and colleges throughout the nation.



**ARTIST'S DRAWING** of the seven-story Morton Medical Research Building, which will be constructed on Northwestern University's Chicago campus. Completion is scheduled for May 1955.

### **New Northwestern Building**

Construction will begin in February on the seven-story Morton Medical Research Building, an addition to Northwestern University's Chicago campus. This building will feature special movable metal wall partitions which can be set up at any 10-foot interval to provide quick laboratory conversion to any size desired. Each movable wall will be equipped with water, gas, steam, air and vacuum pipes. A continuous run of copper bars will provide a bus duct electric system, unusual for a research building. Switches can be attached at any one-foot interval along the bars for power at any point in the building.

### **International Language**

Beginning with the January issue, "Blood-The Journal of Hematology" is publishing a summary of each technical article in "Interlingua," an international language derived from Italian, French, English, Spanish and Portuguese. The move is an extension of the growing effort in all fields to break down the language barriers.

### **Medical Library Scholarships**

The Medical Library Association is offering four scholarships of \$150 each for summer school courses in medical library work in 1954. Two are for Columbia University and two for Emory University.

Registration dates are July 1-2, and the closing date for scholarship applications is May 1. Candidates must have been already accepted by the school. Completion of the scholarship course will enable a student with a bachelor's degree and one year's library school training to qualify for Grade I certification by the MLA. Inquiries should be directed to Emory or Columbia.

### **Funds Increase**

Funds available for medical research at present are 10 times greater than those available a decade ago, according to a report made available by the National Institutes of Health.

The greatest increase came during the war when the emergency need for

research arose. Especially notable is the increase in funds provided by the federal government—from \$28 million in 1946 to \$76 million in 1951. Expenditures for medical research have increased from 2 per cent of the national income in 1940 to 7 per cent in 1953.

### **Runyon Fund**

At the end of the fiscal year on November 30, the Damon Runyon Memorial Fund for Cancer Research, Inc., had allocated \$1,239,357 to institutions and fellowships here and abroad. Most recent grants went to Stanford University; George Washington University; the First Chemical Laboratory, Vienna University, Austria; and the Committee for the Promotion of Medical Research, Inc., New York.

To date, the fund has granted \$7,407,986 in 409 grants and 259 fellowships at 173 institutions in 47 states, the District of Columbia and 15 foreign countries.

## **College Briefs**

### **Albany**

The Atomic Energy Commission has awarded a grant of \$9,000 for the purpose of conducting basic research in the department of biochemistry. A project to study the manner in which the animal body begins to break down urea which has been tied with radioactive carbon will be carried out by Dr. PRADISTH CHEOSAKUL, Dr. ARTHUR KNUDSON, Dr. RICHARD MILLER and LESLIE A. WILCOX.

### **Calif., S. F.**

Dr. ROBERT B. AIRD, chairman of the department of neurology, has returned from Europe, where he attended several medical meetings, delivered 14 papers and visited 15 clinics.

Four faculty members were among

100 young men recently selected as representative of San Francisco's future leadership. The selections were made by a committee of business men and civic leaders in a search sponsored by the Chamber of Commerce and *Time* magazine. Faculty members are: Dr. C. HENRY KEMPE, assistant professor of pediatrics; Dr. HERBERT C. MOFFIT Jr., assistant clinical professor of medicine; Dr. FRANCIS A. SOOY, associate clinical professor of otorhinolaryngology; and Dr. MALCOLM A. WATTS, assistant clinical professor of medicine.

### **Duke**

Dr. EWALD W. BUSSE, chairman of the department of psychiatry, has been elected a fellow in the American College of Physicians. He joins 22

other members of the Duke faculty who are either fellows or associates of ACP. At present he is engaged in research on physiological changes in schizophrenics, mental health in elderly people and methods of teaching psychosomatic concepts.

### **Georgetown**

Five new grants totaling \$72,599 have been received from the Public Health Service. They include a teaching and training grant in neurology of \$24,250, with the objective of increasing the number of young neurologists in training in the area; \$16,000 for the evaluation of new anti-convulsant drugs; \$7,500 for a study of ascorbic acid metabolism in leukemia; \$15,984 for a cardiovascular and cardiovalvular replacement project; \$8,865 for a study of the mechanism of abnormal calcification, with emphasis on kidney stones.

### **Harvard**

Dr. BENJAMIN CASTLEMAN has been appointed clinical professor of pathology at the medical school and chief of the department at the Massachusetts General Hospital. Dr. Castleman has been associated with the hospital since 1931 and on the teaching staff of the school since 1935.

### **Jefferson**

United Cerebral Palsy has made a research grant of \$7,500 to Dr. CHARLES F. MCKHANN, professor of pediatrics, for studies on the cause, arrest and possible reversibility of brain injury.

### **Minnesota**

Dr. A. B. BAKER, professor and director of the division of neurology, has been named chairman of the National Committee for Research in Neurological Disorders. The purpose of the committee is to stimulate national-scale research and training in the field of neurological disorders.

Dr. ROBERT S. ABERNATHY, fellow in the department of medicine at the

university hospitals, has been awarded a research fellowship in medicine by the American College of Physicians, effective July 1. He will work under the preceptorship of Dr. WESLEY W. SPINK, professor of medicine, on the pathogenesis of brucellosis.

A course in emergency surgery for general physicians will be presented April 1-3. The faculty for the course will include Dr. J. GARROTT ALLEN, professor of surgery at the University of Chicago, who will also deliver the annual Clarence M. Jackson lecture on April 1.

### **Medical Evangelists**

The annual alumni postgraduate convention, February 23-25, is planned primarily for general practitioners this year. Among the speakers will be Maj. Gen. GEORGE E. ARMSTRONG, Surgeon General, U. S. Army; Dr. HAROLD B. BOYD, 1953 president of the American Academy of Orthopedic Surgeons, and DENIS BROWNE, children's surgeon of London.

### **N. Y. Univ., Bellevue**

WINTHROP ROCKEFELLER, former chairman of the board of trustees, presented the center with a gift of \$105,000. University Hospital will receive \$26,250 of the gift for medical, surgical, dietary and housekeeping equipment. The \$78,750 balance will be applied toward construction costs of the medical science building.

Dr. NORTON NELSON has been promoted from associate professor to professor of industrial medicine in the postgraduate medical school. He has been with the Institute of Industrial Medicine as director of research since 1947.

The promotion of Dr. ROSA LEE NEMIR from associate to full professor of pediatrics has been announced.

### **Oregon**

The new \$6 million, 14-story hospital now being constructed will be known as the University of Oregon Medical School Hospital, according to

a resolution passed by the Oregon State Board of Higher Education. The orthopedic section will be named in memory of Dr. RICHARD B. DILLEHUNT, dean emeritus, who died October 31.

The Public Health Service has renewed its \$25,000 cancer training grant to the medical school for another year. The grant is used to support a student research project under the guidance of Dr. RUSSELL S. JONES, associate professor of pathology, and to aid the tumor clinic.

Dr. KARL ERIC HAGBARTH of the Nobel Institute of Neurophysiology, Stockholm, has received a three-month appointment as research assistant at the medical school. He will participate in the pain project being conducted by the surgery department.

Four medical school faculty members received appointments or were elected to posts in scientific organizations during the past month. Dr. FRANK B. QUEEN, professor of pathology, has been designated as tissue pathologist in the pathology and allied sciences division of the office of the U. S. Surgeon General on a reserve basis. Dr. HOWARD P. LEWIS, professor and head of the department of medicine, was named to the newly created board of contributing editors of the *Oregon Journal*, Portland daily. The board will act in an advisory capacity and members will write authoritative editorials from time to time.

Dr. F. J. UNDERWOOD, assistant clinical professor of medicine, was elected president of the Oregon Heart Association at a meeting of the board of directors. Dr. DAVID D. DEWESE, clinical professor of otology, was re-elected president of the Portland Center of Hearing and Speech. Dr. DeWeese is a member of the board of the American Hearing Society.

### Pennsylvania

In an expansion of its facilities for the study of the cell, a new section on cytology and cytochemistry has been organized. Dr. EDWARD D. DELAMATER, who is research professor

of microbiology and research professor of dermatology, has been appointed director of the new section with a staff of 10 persons. The work is supported by a separate budget in the school of medicine and by a number of grants from various foundations and health services.

A grant of \$7,665 has been received from the National Foundation for Infantile Paralysis. The grant was made in the name of Dr. LOUIS B. FLEXNER, professor and chairman of the department of anatomy, and the funds will be expended in studies of the reaction of living nerve cells from various parts of the human nervous system to strains of poliomyelitis virus.

### State U. of N. Y., Brooklyn

Dr. A. ST. GEORGE HUGGETT and his wife, Dr. ESTHER KILICK, both professors of physiology at the University of London, were guest speakers at the annual Research Society lecture. Professors Huggett and Killick are on a year's leave of absence, and are engaged in research in their fields of interest at the Johns Hopkins University Medical School.

### State U. of N. Y., Syracuse

Dr. LEE WALTON, instructor of pediatrics, has been named acting assistant dean for graduate and postgraduate medical education. This appointment fills the vacancy created when Dr. WALTER S. WIGGINS resigned to accept the post of associate secretary of the Council on Medical Education and Hospitals of the American Medical Association.

### Tennessee

Dr. FOY B. MITCHELL, chief resident in pediatrics at the John Gaston Hospital, has been awarded a one-

year traineeship in cardiology by the National Heart Institute of the Public Health Service. He will study heart conditions in children in the division of pediatrics at the university and hospital.

Three research grants totaling \$47,107 have been awarded to investigators in the division of pathology and bacteriology. Two of the grants, a total of \$34,907, represent renewals of awards to aid in the search for a blood test for cancer. These investigations are under the supervision of Dr. WILLIAM HALE, professor of bacteriology; Dr. FREDERIC CHANG, research associate and Dr. DOUGLAS H. SPRUNT, chief of the division of pathology and bacteriology. The third grant, for \$12,200, will finance a continued long-range study on the effect of nutrition on the ability of patients to resist infections.

Investigators in the division of pediatrics have been awarded research grants totaling \$21,928.

Dr. R. R. OVERMAN, director of the section on clinical physiology, has been awarded renewal of his research grant of \$6,089 by the Public Health Service. He is studying the effects of diuretic and anti-diuretic agents on general, vascular and tissue cellular permeability.

### **Southern California**

A \$24,105 institutional research grant has been received from the American Cancer Society. The grant is more than double that given last year and will be used to help finance a wide range of cancer research projects now in progress. The school has an interdepartmental cancer research committee representing all departments and headed by Dr. IAN MACDONALD, associate clinical professor of surgery.

A loan fund for students in memory of the late Dr. REX D. DUNCAN, pioneer Los Angeles cancer specialist, has been established by his sister, GRACE DUNCAN. A \$2,000 check has been presented and the fund eventually will reach \$5,000.

### **Southwestern**

Dr. EDWARD H. CAREY, one of the founders of the medical school, died December 11 at the age of 81. He was dean of the Baylor Medical School while it was in Dallas and prior to that was dean of the University of Dallas Medical Department, the first medical school in the city.

### **Texas, Galveston**

Dr. MOLLY R. HARROWER, clinical psychologist of New York City and director of the research program of the court intake project of the family relations court of New York City, has accepted an appointment as lecturer in clinical psychology. Dr. Harrower will be in residence in Galveston for several weeks in February and March of each year. She will conduct special seminars and demonstrations illustrating ways in which clinical psychologists may cooperate in current medical problems.

The fourth annual conference on diseases in nature transmissible from animal to man will be held at College Station, Texas, April 12-13, under the auspices of the University of Texas, the Agricultural and Mechanical College of Texas and the Texas State Department of Health. This conference serves as an important coordinating effort between veterinarians, public health officials and physicians.

Dr. ROBERT N. COOLEY of the department of radiology, Johns Hopkins, has accepted an appointment as professor of radiology and chairman of the department. A considerable extension of department facilities in the new John Sealy Hospital building is being developed under Dr. Cooley's direction. Dr. W. W. NOWINSKI, director of the Tissue Metabolism Laboratory was visiting lecturer in tissue metabolism at the Institute on Cardiology, Mexico City, for the past two months.

Dr. G. W. A. CURRIE of the University of Colorado Medical Center, has been appointed administrator of the medical branch hospitals in Gal-

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veston beginning February 1. Dr. Currie received his training in hospital administration at Queen's University, Kingston, Ont., and at the College of Physicians and Surgeons, Columbia University.

Dr. W. R. COOKE, professor of obstetrics and gynecology, was honored recently by former residents who trained under him. They unveiled an oil portrait of Dr. Cooke which is to be placed in the new facilities of the department of obstetrics and gynecology in the new John Sealy Hospital building.

#### **Western Reserve**

The first clinic for muscular dystrophy patients in the Cleveland area was established in December. Dr. PAUL J. VIGNOS JR. has been named director. The clinic has been set up with the aid of a gift of \$8,000 from the Cleveland Chapter of the Muscular Dystrophy Association, which expects to continue its support.

#### **West Virginia**

Dr. GORDON R. MCKINNEY has been appointed assistant professor of pharmacology in the schools of medicine and pharmacy. He has been a fellow

with the American Cancer Society at Duke since receiving his Ph.D.

#### **Yale**

The National Foundation for Infantile Paralysis has awarded a grant of \$150,000 to be made available during a five-year period, to develop a teaching program in the field of rehabilitation. Dr. THOMAS F. HINES, assistant professor of medicine and director of physical medicine and rehabilitation, will administer the new program. Last year he received a grant of \$20,500 from the national foundation. The funds will be used to increase the staff of the present rehabilitation service now operated at Grace-New Haven Community Hospital. In addition, funds will be available for continued clinical research in rehabilitation.

#### **Wisconsin**

A postgraduate course for the general practitioner on surgical considerations in general practice will be offered February 9-11. The course will be conducted by Dr. ERWIN R. SCHMIDT, professor and chairman of the department of surgery, assisted by 23 faculty members.

# Audiovisual News

## Teaching Films on Circuits

Two groups of short films for cancer teaching have been placed on the Audio-Visual Preview Circuits for Medical Colleges. These are the first of 33 films being completed under a grant from the National Cancer Institute, Public Health Service, Federal Security Agency.

One group of films placed on the circuits includes four of the series on the respiratory tract: *Acquired Lesions Of The Epiglottis*; *Vocal Nodules*; *Contact Ulcers And Granulomas Of The Vocal Cords*; and *Cysts And Polyps Of The Vocal Cords*. These films are excerpted primarily from endoscopic film footage photographed by Dr. Paul H. Holinger, University of Illinois School of Medicine, and Dr. Louis H. Clerf, Jefferson Medical College.

The second group is a series of five fluoroscopic films on the gastrointestinal tract: *The Normal Esophagus*; *Carcinoma Of The Esophagus Invading The Trachea*; *Carcinoma Of The Esophagus — Advanced Cases*; *The Normal Stomach*; and *Pathological Findings In The Stomach*. The cinefluorography was done by Dr. Robert Janker, University of Bonn.

These films are designed to be used by the instructor as personal tools to assist him in teaching existing knowledge and skills rather than to provide him with new information. The films are silent but are printed on single perforated stock for full magnetic tracking. The instructor is thus able to place his own narration on the film. In addition, guide labels are firmly affixed to the film cans for use by the instructor or student.

## Summaries of Film Reviews

### **Exfoliative Cytologic Method in the Diagnosis of Gastric Cancer**

21 min., color, sd., 16 mm., 1951.

An introduction presents the need for special cytological methods for the diagnosis of gastric carcinoma. The marked tube, balloon with net, syringe and inflating bulb are shown. Passage of balloon and tube are demonstrated in animation, followed by a fasting patient who swallows balloon and tube, has his gastric contents aspirated before inflation of the balloon, permits peristalsis and has the balloon pulled back from pylorus to cardia eight times before withdrawal of the collapsed balloon. Collection and concentration of cellular material from the balloon net is demonstrated; normal and cancerous cells are seen. Three diagnostic cases are presented as a basis for statistics on 100 test cases.

This report film of a promising new method for cancer diagnosis was made for the stated reason of gaining a very wide practical testing of the procedure in diverse medical hands. As one of the family of cytological approaches toward earlier cancer diagnosis, the film deserves praise as a route for visually informing the medical profession and demonstrating new equipment, methods and results. Productionally the film is competent, straightforward, clear, and contains very good shots. There is a considerable admixture of the verbal report tradition in what is otherwise a thoroughly visual product.

For all practitioners and students, the film clearly delivers its suggestive and hopeful method of a new diagnostic procedure. Pathologists will eye the film's message warily because a flood of poorly collected gastric cytological smears will gravely increase the burden of proper examination of such smears. If the procedure becomes widely accepted, the film will be useful as a

training film for doctors and medical students.—D.S.R., with *MAVI Panel*, September 1953.

**Audience:** Physicians, medical students, medical technicians.

**Production Data:** **Sponsor:** American Cancer Society; **Scientific Advisors:** George N. Papanicolaou, M.D., and William A. Cooper, M.D., Cornell University Medical School and the New York Hospital; **Producers:** Audio Productions, Inc., New York, N.Y.

**Distribution:** American Cancer Society, 47 Beaver St., New York, N.Y., **Loan or Sale.**

#### **Cancer: A Research Story**

27 min., color, sd., 16 mm., 1953.

Dr. Charles S. Cameron as interlocutor introduces the genetic studies in cancer inheritance, and Dr. Roscoe Little elaborates on these factors in his laboratory. Dr. John J. Bittner (Minn.) summarizes the milk factor, a virus, in experimental mouse cancer. Dr. Charles Huggins (Chicago) presents data on prostatic cancer in humans and some possible hormonal relationships. Dr. Louis Fieser (Harvard) discusses the apparent role of chemical carcinogens. Dr. Cornelius Rhoads (Memorial Hosp.) touches the high points of research designed to discover chemicals which will restrain the growth of cancer. Dr. Cameron summarizes the high points of the symposium.

Prepared as a motion picture for primary lay television utilization and later distribution as a nontheatrical film, the production has a high order of scientific accuracy and authenticity. The inclusion of Bittner's work on mouse milk virus factor strongly disposes lay audiences to the conviction that *human* cancer is caused by a virus, since the relative unintelligibility of much of the remainder only fortifies the familiarity of the idea of viruses. The production is well-conceived and executed with many good lines and a number of good film-TV staging devices which, however, show crudities stemming from hasty production for television. The color is only just adequate in its quality, and many small details (such as the x-rays) could be much improved.

It is doubtful that the public is prepared for the complex knowledge presented in this film at the presentational pace of a telecast, even when simplified as much as the producers and scientists thought. The impression of optimism and progress and viruses are perhaps the film's impact. However, it is quite possible that the film

will be a meaningful, if superficial, presentation of cancer research to certain practitioner groups, who will also find the personalities far more interesting than can the public. Students in the medical sciences will perhaps be interested in such a quick summary of accomplishments and trends.—D.S.R., with *MAVI Panel*, October 1953.

**Audience:** Lay public, students in medical sciences.

**Production Data:** **Sponsor:** American Cancer Society; **Producers:** Teleprograms, Inc.; **Photographer:** Joe Dephure.

**Distribution:** American Cancer Society, 27 Beaver St., New York, N.Y., **Sale: \$135, or Loan.**

#### **A Study of Vocal Cord Abnormalities Following Bulbar Poliomyelitis**

14 min., sd., color, 16 mm., 1952.

Post-polio patients are shown, while asphyxia is emphasized as the threat to life in laryngeal paralyses. Camera-mirror equipment for laryngoscopic cinematography is shown in detail with a normal subject whose pharynx and larynx are seen. Cases demonstrating fluid collection in the pyriform sinuses, left cord paralysis, left cord partial paralysis, and total paralysis with tracheotomy are shown.

Not only does this film carry a single potent message concerning the critical need for an open airway free of pathological drainage of secretions, but it also shows dramatic and authentic post-polio-myelitis laryngeal paralyses achieved through an excellent method of mirror laryngoscopic cinematography. The case material is good, and organization and execution of content is excellent, if somewhat marred by disturbing dissociation between screen and voice during the introduction and conclusion.

Students of medicine in laryngology and pathology will profit by this graphic and objective lesson concerning one of the grave complications of bulbar poliomyelitis. This lesson will be especially provocative in discussions of polio management, and will obviously be conducted best by an ENT expert.—D.S.R. with *MAVI Panel*, August 1953.

**Audience:** Students in medicine (laryngology), pathology.

**Production Data:** **Sponsors:** National Foundation for Infantile Paralysis and University of Minnesota Graduate School; **Producers:** University of Minnesota, Audio-Visual Education Service; **Medical Adviser:** William G. Kubieck, M.D., Division of Physical Medicine; **Cameraman:** Don Cain.

**Distribution:** Audio-Visual Education Service, University of Minnesota, Minneapolis, Minnesota, **Sale: \$140, or Loan.**

### A Functional Study of the Tongue and Velo-Pharyngeal Musculature

8 min., sd., color, 16 mm., 1950.

A woman patient with a surgical defect of the nose, maxilla and septum, deriving from wide excision of a squamous cell carcinoma, demonstrates her speech without and with her special prosthetic devices. She demonstrates her relatively normal phonation by reading a children's book. Views through the defect into the nasopharynx and through the transparent plastic palate permit observation of the structure and functions of the area. Phonation, swallowing, and whistle blowing are observed through the defect.

The case is an interesting one and represents an important opportunity to study and teach the anatomy and physiology of the mouth and pharynx. The clinical results in the case are excellent. And the case data has a high emotional appeal, aided greatly by the personalized "I am the patient" format of presentation. Unfortunately, the anatomical orientation could be much improved by visual devices. The observations possible through the clear plastic palate are so distorted by the surfaces of the prosthesis that tongue-cheek-pharyngeal actions are quite unsatisfactorily seen. In sum, the message is more that of an unclear demonstration to specialists than an orderly revelation of facts for students.

For maxillofacial surgeons and prosthodontists, ENT specialists and phoneticians, the film may be revealing and instructive both in what is said and not said. For students of physiology there is too much that is not clear. Students of speech will find a certain motivation in the clinical success demonstrated.—*D.S.R., with MAVI Panel, August 1953.*

**Audience:** Students of speech, phoneticians, prosthodontists.

**Production Data: Sponsor and Producer:** Audio-Visual Education Service, University of Minnesota; **Medical Advisor:** Daniel A. Listiak, D.D.S.; **Camerman:** James McCarron.

**Distribution:** Audio-Visual Education Service, University of Minnesota, Westbrooke Hall, Minneapolis 14, Minn.; **Sale:** \$90, or **Loan:**

### The Sneeze

4 min., b&w., si., 16 mm., 1940.

At 700 frames per second high-speed stroboscopic cinematography of a sneeze is demonstrated, showing inspiration followed by vigorous expulsion of droplets of all sizes. Sneezes two and

three again demonstrate the nature and results of violent expulsion of air from mouth and nose.

This research film fragment graphically shows the anatomy of three sneezes, as externally analyzable by the high-speed strobe light camera in a dark background setting. There is nothing of the causes of internal mechanics of the process. By implication the film demonstrates the potential of the sneeze in air-borne bacterial and virus infections. The film comprises brief camera data only, without analysis or interpretation. Photographic print quality leaves something to be desired, but the film's objectives are satisfied.

This dramatic short deserves to be owned by every department of bacteriology, medicine or hygiene as the irrefutable documentation of sneeze effects. Integrated as a "slide in motion" into many different types of presentations, the short lends itself to ad lib commentary on the realities of airborne droplets as the infective links between humans.—*D.S.R., with MAVI Panel, August 1953.*

**Audience:** Students of microbiology and hygiene.

**Production Data: Highspeed Cinematography:** M. W. Jennison, Ph.D., Massachusetts Institute of Technology, Cambridge, Mass.

**Distribution:** Dr. Harry E. Morton, Committee on Materials for Visual Instruction in Microbiology, University of Pennsylvania School of Medicine, Philadelphia 4, Pa.

**Reference:** M. W. Jennison, Ph.D., Atomizing the Mouth and Nose Secretions into the Air as Revealed by High-Speed Photography. Aerobiology, 1942, Science Press Printing Co., Lancaster, Pa., pp. 106-28.

### The Life Cycle of *Endamoeba histolytica*

15 min., si., color, 16 mm., 1943.

Cysts of *E. histolytica* ingested in food or water are shown excysting and forming light amebulae. Asexual multiplication and motility are demonstrated. The structure of a trophozoite is shown in detail. The pathological process of intestinal ulcerative amebiasis is outlined. The causation of amebic liver abscesses is shown, along with other possible sites of metastatic pathology.

This is the simple condensation onto film of a blackboard and slide-illustrated lecture concerning the principal elements of the *E. histolytica* life cycle, with animation for a few sequences. Accurate as far as it goes in its important details, the brief silent titles obstruct what visual flow there is. Animation is



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**Bibliography:** 1. Humphreys, P., *et al.*: *Angiology* 3:1 (Feb.) 1952. 2. Russek, H. I.; Urbach, K. F.; Doerner, A. A., and Zohman, B. L.: *J.A.M.A.* 153:207 (Sept. 19) 1953. 3. Plosa, M.: *New York State J. Med.* 52:2012 (Aug. 15) 1952.

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simple but it is functionally effective.

As a substitute for or adjunct to a lecture on amebiasis, teachers of medical parasitology may find the film to be time-saving and perhaps superior to the more familiar personal slides and blackboard. As a motion picture it is inferior, but functional considerations may outweigh the shortcomings of film production.—D.S.R., with MAVI Panel, October, 1953.

**Audience:** Students of medical parasitology.

**Production Data:** **Sponsor-Producer:** Medical Illustration and Motion Picture Sections, U. S. Navy; **Scientific Adviser:** Department of Parasitology, U. S. Naval Medical School, Bethesda, Md.

**Distribution:** **Sale:** United World Films, Inc., 1445 Park Ave., New York 29, N. Y., \$61.50; **Loan:** Audio-Visual Training Section, Bureau of Medicine & Surgery, U. S. Navy Department, Washington 25, D. C. (Use Code No. MN-2617.)

### Hypertensive Crises

48 min., color, sd., 16 mm., 1952.

This research report of three teams from Boston University and Boston City Hospital concerns the nature and applications of *Veratrum viride* and its purified extract Veriloid. Clinical manifestations of hypertensive encephalopathy are stated. The pharmacological action of veratrum alkaloids is identified, and negative neuromuscular physiological effects permit the deduction that drug action is upon the central nervous system. Physiological studies of blood flow show that the drug decreases resistance without lowering blood flow, in this way creating hypertension. Statistics on Veriloid administration in 25 patients are interspersed with clinical data and the method of administration.

This film introduces a promising new hypotensive drug, Veriloid, and presents a large volume of laboratory and clinical data in support of its use. However, the pharmacological data, as far as these are contained in the film, neither establish clear understanding of Veriloid action, nor seek to contrast its action with other hypotensive agents. Contraindications are rather inadequately considered; and almost as an afterthought the drug is shown to provide symptomatic relief only, important as this may be. Productionally, the film consists of 48 minutes of pauseless spoken information, accompanied by pictorial material which has little or no visual continuity and in general resembles a rapid succession of lantern slides. Complex drawings, much screen reading matter (often in fine

print), rapid pace timed to words rather than pictures, and failure to analyze the laboratory procedures in clear visuals tend to confuse the film's real pictorial content.

Only specialists are able to follow, retain and evaluate the mass of data enumerated in such an illustrated film lecture. Medical students and practitioners are very likely to find assimilation and understanding difficult because of the film's presentational shortcomings, and the abundant research data are often superfluous. Since the overall impression of the film constitutes a recommendation for its use, presentation in the presence of an expert is necessary in order to clarify questions of applicability which are inherent in the film's data.—A.N., with MAVI Panel, June 1953.

**Audience:** Specialists in cardiovascular diseases, practitioners, medical students.

**Production Data:** **Sponsor:** Riker Laboratories, Inc., Los Angeles, Calif. **Scientific Collaborators:** George L. Maison, M.D., Robert W. Wilkins, M.D., and Norman S. Stearns, M.D., Boston University School of Medicine and Boston City Hospital; **Producer:** Medical Film Guild, Ltd., New York, N. Y.

**Distribution:** Riker Laboratories, Inc., 8480 Beverly Blvd., Los Angeles 48, Calif. **Loan:**

#### References:

1. Maison, G. L.: Review of Pharmacology of Hypotensive Derivatives of Veratrum. Symposium Am. Chem. Soc., Cleveland, April 1951.
2. Wilkins, R. W.: Recent Experiences with Pharmacologic Treatment of Hypertension. From Hypertension, a Symposium, University of Minn. Press, 1951.
3. Swiss, E. D., and Maison, G. L.: The Site of Cardiovascular Action of Veratrum Derivatives. Jour. Pharm. and Exp. Ther. 105, May 1952.

### Habits and Characteristics of the Rat: The Norway Rat (Rodent Control Series No. 2)

28 min., b&w., sd., 16 mm., 1950.

The rat is shown as a type of parasite of man, and his physical qualifications for survival are demonstrated. Norway and roof rats are contrasted as competitors in parasitism upon man. In a glass-walled cage the burrow system of the Norway rat is shown. The behavior of rats and the relationships of food, water and safe harborage are presented in a variety of common situations of city and country. Courtship, mating, birth and rearing of the young are shown. After weaning, the young rats are seen learning to survive in the life of a colony, competing and moving afield when food or harborage fail.

This remarkable film on the life cycle of the most destructive and dangerous

mammal living close to man was possible through specially developed methods for prolonged cinematographic studies in two rattariums. The organization and coverage are unique and relatively complete. Production skills are superior in all aspects. Black and white film is an asset, since it should permit wide ownership of this fundamental film unit.

Apart from its semi-technical language level, the film reaches audiences from about the seventh grade public school level to medical and public health students, so clear and fundamental is the material contained. Because of the unique nature of the film footage, and the impossibility of teaching this material as graphically in any other way, the film should become the standard property of all teachers concerned with biology, hygiene and public health. Others of the series should be utilized for special purposes.—D.S.R., with MAVI Panel, May 1953.

**Audience:** Students of biology, hygiene and public health.

**Production Data: Sponsor and Producer:** U. S. Army and the Communicable Disease Center, Public Health Service.

**Distribution:** U. S. Public Health Service, Communicable Disease Center, 605 Volunteer Building, Atlanta 3, Ga., **Loan** (giving Code No. M-37b); United World Films, Inc., 1445 Park Ave., New York 29, N. Y., **Sale**.

#### Oral Cancer—The Problem of Early Diagnosis

31 min., sd., color, 16 mm., 1953.

A patient with a suspicious tongue lesion is examined by a dentist. The anatomical areas of oral pathology are reviewed in diagrams: gingiva, palate, tongue, cheek, lip and floor of mouth. Statistics of five-year cure are given for all cancers of each area, contrasted with cure rates of lesions where intervention occurred before 2 cm. growth. Methodical physical examination of the oral area is demonstrated through visualization and palpation. Lymph drainage of face and neck, and proper physical examination of nodes are shown. Typical cases of neoplasms of gingiva, palate, cheek, tongue, lip and mouth floor are seen. Three methods of biopsy are demonstrated in suspect cases. Lump-in-the-neck as the first sign of primary oral cancer is shown in a case. High points are summarized.

This compact, accurate and relatively inclusive film is number five of a series, and meets the standards set by prior units. The well-balanced excellence of

the scientific content, the simple and direct development of the visual and verbal message, the good cinematography and workmanly film skills all contrive to produce a review film for practitioners and an orientational one for medical and dental students.

Used as a complete unit with practitioner audiences, proper emphasis will be put upon thorough routine physical examination and upon biopsy. Where necessary, as with captive audiences of students, the film lends itself also to use in parts. The sections on physical examination of the mouth, on lymph drainage, and on oral pathology might well be projected independently.—D.S.R., with MAVI Panel, December 1953.

**Audience:** Medical practitioners, dentists, medical and dental students.

**Production Data: Sponsors:** American Cancer Society and The National Cancer Institute, Public Health Service, U. S. Department of Health, Education & Welfare; **Scientific Advisors:** The Head and Neck Service, Memorial Center for Cancer and Allied Diseases, New York, N. Y.; **Producers:** Audio Productions, Inc., Medical Division, 630 Ninth Ave., New York 19, N. Y.

**Distribution:** American Cancer Society, 47 Beaver Street, New York, N. Y., **Loan or Sale**.

#### Blood Stream in the Basilar Artery

9.5 min., sd., color., 16mm., 1949.

In the anesthetized rabbit the basilar artery is exposed through an anterior cervical incision, following cannulation of the trachea. Trachea, esophagus and prevertebral muscles are divided and reflected; the axis and basilar portion of the occiput are removed to expose the basilar artery lying upon the pons. Blue dye injected into the origin of one or another subclavian artery passes into the ipsilateral branch of the vertebral and remains a distinct stream in the basilar artery. When the noninjected subclavian artery is occluded to modify the normal balance of pressure, mixing occurs in the basilar; upon alternate occlusion and release, altered and normal flow patterns are seen.

The film is a scientific record of an experimental approach to and observations of the unique converging blood patterns seen in the basilar artery (of the rabbit). There are no interpretations or implications in physiology or pathology other than the visually obvious. The normal slight mixing has already been demonstrated for the entire circle of Willis of laboratory animals and man; this and the explanation of findings are ignored. Photography is clear,

if overlong in the surgery; a big closeup would have helped to show the area of minimal mixing in the artery; the simple insert diagram was helpful, but the ending was needlessly abrupt.

The subject matter, while adequately demonstrated, is not of high importance in the teaching of basic physiology, but may be of value to graduate students in physiology and radiology. The facts shown are already familiar from experimental and clinical studies of cerebral angiography.—D.S.R., with MAVI Panel, July 1953.

**Audience:** Students of physiology; neurosurgeons; radiologists.

**Production Data:** **Sponsor:** Burroughs Wellcome & Co. (the Wellcome Foundation Ltd.), London; **Authors:** D. A. McDonald, J. M. Potter, Department of Physiology, St. Bartholomew's Hospital Medical College, London; **Producers:** Wellcome Film Unit; **Camera:** Douglas Fisher.

**Distribution:** (in England) Burroughs Wellcome & Co., London; (in U. S. A.) Motion Picture Library, American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.; **Loan** (service charge \$1.).

#### **Cyst of the Urachus**

19 min., color, si., 16 mm., 1953.

Following descriptive and introductory titles, a sagittal section diagram shows the position of the urachal cyst below the umbilicus and above the bladder. The patient's midline mass is palpated and marked on the abdominal wall. Through a right paramedian incision the extraperitoneal cyst is dis-

sected free, beginning with the urachus from the lower pole of the cyst to the bladder, from the cyst upward to the umbilical attachment, and freeing the cyst from the rectal sheath anteriorly. The urachus is severed below and above, is tested and found to be non-patent at the cyst itself. The cyst is removed, opened and examined. A patent section of the urachus just above the bladder is ligated and excised.

This excision of an urachal cyst, an infrequent surgical entity deriving from a common developmental anomaly, is simple, straightforward, and clear. Photographic clarity is good, and all critical steps are visualized despite bloody fields. The film is adequate as case record cinematography, but the titles are inordinately long, detailed and time consuming. Optical or magnetic sound and informative can labels would serve to reduce this film to efficient length for utilization.

For surgical residents, the film is self-explanatory, and provides a visual document revealing the few problems inherent in the uncomplicated clinical situation.—D.S.R., with MAVI Panel, October 1953.

**Audience:** Surgeons.

**Production Data:** **Author:** J. Norman O'Neill, M.D., F.A.C.S., Los Angeles, Calif.; **Producers:** Billie Burke, Hollywood, Calif. **Distribution Data:** Billie Burke Productions, Inc., 7416 Beverly Blvd., Hollywood, Calif.; **Loan or Sale.**

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## *Medical Illustration*

**T**RACING THE HISTORY of medical illustration . . . probably no single event has contributed so much to the advancement of medical knowledge as the basic discovery of photography with all that it implied. With the necessity of crowding into a curriculum all the material now considered necessary for the training of a physician or surgeon, newer methods of teaching had to be found. Language must always be the main stream of communication, but, to quote a report on the use of audio-visual aids in the U. S. Armed Services: "The concepts of more learning in less time, of greater retention, and of more realistic instruction have reinforced the contention that learning can be facilitated and made more meaningful through appeal to all senses."—from a report by TOM JONES, University of Illinois, "First World Conference on Medical Education," *British Medical Journal*, September 5, 1953, p. 561.

## Book Reviews

### Doctors, People and Government

**James Howard Means, M.D.**, emeritus professor of clinical medicine, Harvard; medical department, Massachusetts Institute of Technology, Little, Brown and Company, Boston, 1953. 206 pp. with index. \$3.50.

The expressed purpose of this book is "to review the public affairs of medicine, to scrutinize the factors involved in the improvement of medical service, to note what is being done or should be done to solve them, and also to stir up popular interest in these matters in order to stimulate the formation of an enlightened public opinion." The premise from which the author starts is that all of the people are entitled to the best medical care which science and art permit and which they can afford to buy and emphasizes that they are now not getting this care.

Four chapters are devoted to a careful analysis of the problems of medical care in the modern social order and the roles of the medical school, hospital, physician and organized medicine. Three chapters summarize the various attempts to meet modern medical needs in Great Britain and the United States. One chapter discusses legislation and litigation. The final chapter gives the author's views as to what can and should be done.

Throughout the book the author shows much concern for the public criticisms leveled against the medical profession, although he admits the justice of some of these criticisms. In fact he cites specific instances wherein to him and to an important professional minority, organized medicine seems to have erred and to have brought upon the profession as a whole a deluge of criticism. Despite the candor with which he writes of the adverse criticism, the author on the whole maintains a constructive attitude and his recommendations in the concluding chapters deserve thoughtful consideration. He says, "It is fruitless to concoct idealistic schemes impossible of accomplishment. I do not favor nationalized medicine for the United States any more than organized medicine does."

He outlines constructively what he believes we can do. Both federal and non-governmental medical edifices must be put in order. At national, state and local levels there must be worked out co-

operation between government and private or voluntary medicine. He suggests ways by which this can be accomplished.

The book is written by an eminent physician, a past president of the American College of Physicians. It is sponsored by the *Atlantic Monthly* and directed to the general public, including physicians. It should be read by all physicians and medical students. They may not agree with the author in all matters, but will find his ideas thought-provoking if approached with an open mind.

M. E. Barnes, Iowa

### Endocrinology in Clinical Practice

Edited by **Gilbert S. Gordon, M.D., Ph.D.**, assistant professor of medicine, University of California School of Medicine; **H. Linser, M.D.**, clinical professor of medicine and endocrinology and chief, The Endocrine Clinics, University of California School of Medicine. The Year Book Publishers, Inc., Chicago, 1953. Illustrated. 407 pp. with index. \$10.50.

A series of lectures presented at a postgraduate course in endocrinology have been compiled in this volume. Nearly all major aspects of the clinical problems in this field are covered, but chapters vary widely in their completeness, style of presentation and accuracy.

The approach to a patient with endocrine disease is in general well presented with a desirable emphasis on careful clinical examination and judicious selection of laboratory procedures. A summary of currently available hormonal preparations is included. Some chapters are of special interest because of the experience of the author in the particular field, for example, the section on Progressive Exophthalmos by Naffziger. On the other hand, several personal opinions not shared by many in the field are expressed, for example, the statement, "Clinical osteoporosis responds dramatically to the administration of estrogens or of androgens." However the problem is approached in a dynamic fashion with none of the mysticism which has characterized some of the writing in this field. The volume should be useful reading for those whose experience in endocrinology is limited. As indicated in the introduction, no attempt has been

made to include an exhaustive review of the unusual clinical or the research aspects of endocrinology.

Frank H. Tyler, Utah

### Adventures in Physiology

**Sir Henry Hallett Dale, O.M., G.B.E., F.R.S., M.D., F.R.C.P.** Pergamon Press, London, 1953. American distributors, The Macmillan Company, 60 Fifth Avenue, New York 11. 652 pp. Illustrated. \$19.50.

"Adventures in Physiology" represents a collection of paper from the scientific publications of Sir Henry Dale. Of particular importance is the fact that these papers were selected by Dale. Further enhancing the value of the choice reproductions of this volume are Dale's present-day comments appended to each of the 30 items chosen. Written in retrospect they enable the author to re-evaluate his earlier research in light of latest knowledge.

The papers selected fall into three major categories. One of these follows the lines of investigation that led Dale to the description of the pharmacology of epinephrine and related sympathomimetic amines. Another theme deals with the highly specific actions of acetylcholine, the actions of other quaternary ammonium compounds and the chemical transmission of nerve impulses by acetylcholine.

Finally, a third area covers the author's researches on histamine action and the related field of anaphylaxis. The latter researches have evolved concepts of the anaphylactic reaction from the viewpoint of the pharmacologist. This is of particular interest since it reveals the close relationship between basic problems of pharmacology and immunochemistry. It is perhaps most remarkable that all of these several pathways of research developed from an initial exploration into the pharmacological effects of ergot extracts. Histamine and acetylcholine were both recognized and studied as constituents of impure ergot extracts; this at a time when there was no appreciation of their physiologic significance and when a study of pharmacology of ergot may not have seemed of great consequence. As a result of the discovery of the property of ergot to prevent the excitatory and unmask the inhibitory effects of epinephrine, an early cornerstone was laid for our understanding of adrenergic nerves and sympathomimetic drugs. The characterization of the pharmacologic properties of acetylcholine initiated a series of dramatic and well-

known researches that culminated in the explanation of acetylcholine's role in neuro-effector transmission. The book is a revelation of Dale's remarkable acuity and tenacity which led, for each of these substances, to the description of their ultimate role in mammalian function.

W. F. Riker, Cornell

### Peripheral Nerve Injuries, 2nd edition

**Webb Haymaker, M.D.**, chief, neuropathology section, Armed Forces Institute of Pathology; **Barnes Woodhall, M.D.**, professor of neurosurgery, Duke University School of Medicine. W. B. Saunders Company, Philadelphia, 1953. 272 illustrations. 333 pp. with index. \$7.

It happens occasionally that a book has usefulness far greater than the presentation of the subject matter about which it is specifically written. Such a book is the new edition of this popular monograph on peripheral nerve injuries. The detailed description of the technique for conducting the motor examination, beautifully illustrated, places it in the category of an indispensable reference and guide for all physicians who need to examine the muscular system. This will apply especially to the neurologist, orthopedist, industrial surgeon and specialist in physical medicine. And for the physician who must analyze peripheral nerve injuries, the wealth of material presented on each specific type of lesion rarely will be found in any book of this size.

In the new edition the chapter on segmental innervation, particularly the section on the dermatomes, has been amplified, proper credit being given to the schemata of various investigators. A chapter on the pathology of the different degrees of nerve injury is a new and welcome addition. There is also new material on such topics as pain, trick movements, electromyography and skin resistance. The large amount of clinical material illustrated by many photographs was obtained from the collection of the Armed Forces Institute of Pathology, much of which was gleaned from World War II and the Korean conflicts. The subject matter is divided into four sections, covering respectively the topics of anatomy, examination methods, pathology and clinical characteristics of peripheral nerve injuries.

The second edition of this book is almost 100 pages larger and has 47 more illustrations than the first edition. There is appended an extensive bibliography, and the contents are well indexed.

A. T. Steegmann, Kansas

**Annual Review of Medicine, Vol. 4, 1953**

Windsor C. Cutting, editor; Henry W. Newman, associate editor, both of Stanford University School of Medicine. Annual Reviews Inc., Stanford, Calif., 1953. 452 pp. with index. \$6.

This volume presents an excellent coverage of the field of internal medicine. It is outstanding in its scholarly approach. For this reason, unlike a textbook, it is most suitable for use in maintaining the freshness of one's bibliographic background and as a source book for keeping up-to-date in the interpretation of the value and significance of recent research studies.

The editors of this volume have given each contributor a free hand to cover his subject as he sees fit with emphasis on the aspect of the field he knows best. This means, for example, that the topic, "Diseases of the Cardiovascular System," with Dr. Richard Bing as the essayist, has a strong physiological approach with a bias toward anomalies of the heart as befits the background and training of its author. This is true also of the coverage of the central nervous system, with its complete discussion of "Vascular Disease of the Brain" by Adams and Vander Ecken.

The "Annual Review of Medicine for 1953," as has been true of the preceding volumes, is valuable particularly for use in teaching institutions in the preparation of well rounded clinics and lectures. It probably will be of least value to the doctor who is interested only in the practical practice of medicine, because it does not attempt to reach concise conclusions but, as it should, presents a subject as a whole, leaving interpretation and application of the material to the reader.

An extremely valuable supplement to this work is the up-to-date annotated list of reviews of many subjects related to internal medicine, pediatrics, anesthesiology, psychiatry, neurology and public health. These are the reviews of each topic appearing in the medical literature between October 1951 and November 1952.

F. Tremaine Billings Jr., Meharry

**Rose and Carless' Manual of Surgery, 18th edition**

Sir Cecil Wakeley, B.T., K.B.E., C.B., L.L.D., D.Sc., F.R.C.S., F.R.S.E., F.R.S.A., F.A.C.S., F.R.A.C.S., senior surgeon, King's College Hospital, assisted by 18 contributors. The Williams & Wilkins Company, Baltimore, 1952. Over 1,000 illustrations. 1471 pp. with index. \$12.

Sir Cecil Wakeley and 18 collaborators have prepared the 18th edition of this *Manual of Surgery*. Fourteen hundred and seventy-one pages, including more than 1,000 illustrations, have been used in an attempt to cover the entire field of surgery and the surgical specialties. Such a comprehensive treatise was perhaps practical in 1898 when the first edition of the work appeared, but the authors of the present edition would have been well advised had they restricted the subjects to be discussed and published a book more modern and complete than the present volume.

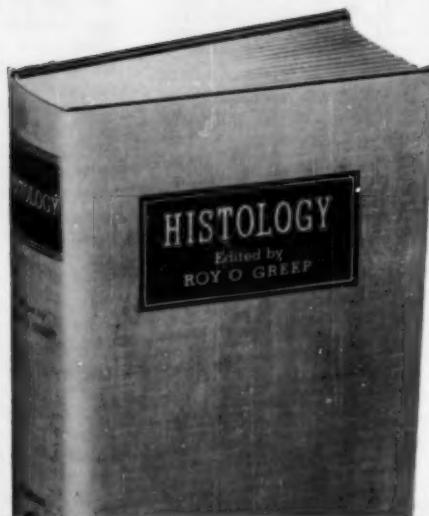
The first eleven chapters, which comprise 117 pages, deal with general subjects such as blood transfusion, wounds, water and salt deficiency in surgery. These chapters are new to this edition and in general are excellent. Even so, it seems inadequate in 1953 to mention only four antibiotic drugs in a chapter entitled "Chemotherapy." The chapter on "Water and Salt Deficiency" apparently was written prior to 1951, as there is only the briefest mention of potassium deficiency.

Some of the chapters dealing with special surgical subjects are excellent, particularly the chapters entitled "Hernia" and "Anesthesia." These, however, barely compensate for the absence of any discussion of the modern concepts of Hirschsprung's Disease, while the treatment of this condition by sympathectomy is discussed at length without mention of Swenson's procedure. The use of radio-active iodine in the management of goiter is not mentioned nor is there any discussion of the present day methods of management of patients with portal hypertension and esophageal varices.

The ultra conservatism which is characteristic of the entire book is best illustrated by quoting from Chapter 37, "Abdominal Surgery." In discussing the treatment of peptic ulcer, the author writes: "At the present time there can be said to be no uniformity of opinion with regard to the line of surgical treatment to be adopted, for until recent years, gastro-enterostomy was pre-eminent, but many surgeons now prefer to do a partial gastrectomy. Yet now there is a swing back to gastro-enterostomy, for the successes of the latter operation are not so outstanding as was first thought."

Despite the beautiful printing and illustrations, despite the wide range of subjects discussed, the reviewer is not

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## GREEP'S HISTOLOGY

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John R. Paine, Buffalo

#### Planning Guide for Radiologic Installations

**Wendell G. Scott, M.D.**, chairman, Committee on Planning of Radiologic Installations of the Commission on Public Relations of the American College of Radiology. The Year Book Publishers, Inc., Chicago, 1953. Illustrated. 336 pp. with index. \$8.

This planning guide was sponsored by the American College of Radiology in response to requests from radiologists, hospital administrators and architects for an authoritative guide to those responsible for the planning and remodeling of radiologic installations. The book represents combined contributions of 50 authors including radiologists, physicists, hospital administrators, manufacturers, architects and other technical experts, all with particular experience in their field of assignment.

Planning is approached from the standpoint of traffic flow as related to the course of patients, processing and interpreting of radiographs and the traffic pattern of the radiologist and technicians. Economic and organizational problems relating to types of examinations, personnel load and general cost analyses are presented. General architectural requirements relating to passageways, treatment of floors and walls, ventilation and air conditioning and electrical service requirements are analyzed. Design of radiographic and fluoroscopic rooms, dressing rooms, toilets, film processing and viewing rooms are discussed in some detail. The section on dark room and film processing presents assembly-line efficiency. Facilities for photofluorography, mobile and dental units and microfilming and filing of records are outlined.

The design and operation of the radioisotope laboratory and of facilities for the preparation, storage and safe handling of radium are considered. There is little discussion of facilities for radiation therapy beyond outlining the protective requirements. The chapter on radiation protection is particularly commendable, providing individualization of requirements according to the weekly work load as well as to the intensity, direction and penetration of radiation utilized. Over one-third of the book is devoted to protection providing recommendations for fluoroscopic and diagnostic facilities and for radiother-

apeutic facilities extending from 75 Kvp to 2,000 Kvp x-rays and for cobalt 60 teletherapy. The National Bureau of Standards *Handbooks on Protection*, No. 41, 50 and 54, are included as an appendix comprising 110 pages. The book should fill a need long felt by radiologists, hospital administrators, deans and architects.

Howard B. Hunt, Nebraska

#### Parson's Diseases of the Eye, 12th edition

**Sir Stewart Duke-Elder, Ph.D., D. Sc., DD.S., M.D., F.R.C.S., F.A.C.S.**, surgeon-oculist to the queen and director of research, Institute of Ophthalmology, University of London. 22 colored plates and 465 text figures. The Macmillan Company, New York, 1953. 606 pp. with index. \$8.

"Parson's Diseases of the Eye" has been a standard elementary textbook in ophthalmology both in this country and in Great Britain for a number of years. Sir Stewart Duke-Elder's revision of this 12th edition, aimed at the general practitioner, medical student and resident ophthalmologist, is a well-written, highly readable book which can, with profit, be read by the seasoned ophthalmologist. Brief, yet adequate, resume is made of the recent developments in such controversial fields as the physiology of the intraocular fluids, metabolism of the lens and metabolism of the cornea. Emphasis is placed upon ocular manifestations of general medical diseases and treatment of commonly encountered local eye conditions. Only 35 pages are devoted to technical aspects of various surgical procedures, certainly all that is necessary for a text of this type. Illustrations and typography are good.

Although several elementary textbooks on ophthalmology are now available in the United States, this can be considered among the best. It can be recommended without hesitation to undergraduate students.

A. Gerard De Voe, N.Y. Univ., Bellevue

#### Ophthalmologic Diagnosis

**F. Herbert Haessler, M.D.**, professor and director of the division of ophthalmology, Marquette University School of Medicine. The Williams & Wilkins Company, Baltimore, 1953. Illustrated. 887 pp. with index. \$8.

"Ophthalmologic Diagnosis" is refreshing in that it does not follow the usual pattern of the ophthalmological textbook which begins with physiological optics, then progresses through refraction, external diseases, etc. Dr. Haessler deals directly with his many

subjects without the verbosity of details we find in multi-editioned works.

The book is devoid of ophthalmic surgery, which this reviewer believes is best left to those works on that phase of ophthalmology. There is also only a slight amount of neuro-ophthalmology, which should be more thoroughly studied in books on that specialty. The book is well equipped with a table of contents and a useful index.

Many rarer entities are dealt with clearly, the treatise on the retinal arteries being particularly illuminating. This book should be a part of every oculist's library.

Ronald A. Cox, George Washington

#### Communicable Disease Control, 3rd edition

**Gaylord W. Anderson, M.D., Dr. P.H.**, Mayo professor and director, School of Public Health, University of Minnesota; **Margaret G. Arnstein, R.N., M.P.H., Sc.D. (Hon.)**, chief, division of nursing resources, United States Public Health Service. The Macmillan Company, New York, 1953. 500 pp. with index. \$6.50.

The third edition has been enlarged by the addition of new chapters on School Problems, Hepatitis and Rheumatic Fever. The authors also, realizing the change in perspective brought about by the declining importance of communicable disease control in the total health department program, have re-evaluated the suggested control procedures. The text therefore presents progressive and modern thinking in a rapidly changing area of public health by two authorities who have a great deal of experience in this field.

The subtitle of the book is "A Volume for the Health Officer and Public Health Nurse." The reviewer has found this text particularly useful in teaching public health nursing students and has also used the author's clear presentation of the concepts of the general principles of communicable disease control in a community as a valuable reference in teaching medical students.

Gertrud Weiss, Colorado

#### Textbook of Physiology

**Caroline E. Stackpole, A.M.**, formerly associate in biology, Teachers College, Columbia University; **Lutie Clemson Leavell, R.N., A.M., M.S.**, associate professor in nursing education, Teachers College, Columbia University. The Macmillan Company, New York, 1953. 418 pp. with index. \$5.

This book was developed as a result of several years of teaching experience with students of nursing, physical edu-

cation, health, nutrition and high school biology teachers. The material is organized around certain topics that confront students of physiology, such as maintaining an awareness to the environment, maintaining a constant oxygen supply and the perpetuation of the human race.

For an introductory text, the authors assume some prerequisite areas of knowledge which generally are not possessed by beginning students. For example, such terms as lipoprotein, ions, hypertonic and interphase are not sufficiently defined and explained.

The book is a good beginning despite this, for it surveys the entire field of physiology, covering the more important topics in some detail. It is written clearly and is interesting to read. The student taking his first course in this subject should have, in addition to this text, some supplementary reading, perhaps even a supporting text. The book would seem to be of special value to students who desire to review their physiology after the completion of a standard course.

#### Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

##### The Psychosomatic Concept in Psychoanalysis

Edited by **Felix Deutsch, M.D.** Monograph series of the Boston Psychoanalytic Society and Institute, No. 1. International Universities Press, Inc., New York, 1953. 182 pp. with index. \$4.

##### Preparation for Medical Education in the Liberal Arts College

**Aura Edward Severinghaus, Ph.D.**, chairman of the subcommittee on preprofessional education of the Survey of Medical Education, associate dean and secretary of the faculty of medicine of Columbia University; **Harry J. Carman, Ph.D.**, director of the subcommittee on preprofessional education, dean emeritus of the college, Columbia University; **William E. Cadbury Jr., Ph.D.**, associate director of the subcommittee on preprofessional education, dean and associate professor of chemistry, Haverford College. McGraw-Hill Book Company, Inc., New York, 1953. 400 pp. with index. \$4.50.

##### Bright Children

**Norman E. Cutts, Ph.D.** and **Nicholas Moseley, Ph.D.**, G. P. Putnam's Sons, New York, 1953. 238 pp. with index. \$3.50.

##### Diseases of the Retina, 2nd edition

**Herman Elwyn, M.D.**, senior assistant surgeon, New York Eye and Ear Infirmary. 243 illustrations with 20 in color. The Blakiston Company, Inc., New York, 1953. 713 pp. with index. \$12.

### Textbook of Physiology and Biochemistry, 2nd edition

George H. Bell, M.D. (Glasg.), F.R.F.P.S.G., F.R.S.E., professor of physiology in the University of St. Andrews at University College, Dundee; J. Norman Davidson, M.D., D.Sc. (Edin.), F.R.F.P.S.G., F.R.I.C., F.R.S.E., Gardiner professor of physiological chemistry in the University of Glasgow; Harold Scarborough, Ph.D. (Edin.), F.R.C.P.E. E. & S. Livingstone Ltd., Edinburgh and London, 1953. American distributors: The Williams & Wilkins Co., Baltimore. 1,062 pp. with index. \$10.

### The Psychiatrist, His Training and Development

Report of the 1952 Conference on Psychiatric Education held at Cornell University June 19-25, 1952. Organized and conducted by the American Psychiatric Association and the Association of American Medical Colleges. American Psychiatric Association, Washington, 1953. 214 pp. with index. \$2.50.

### Ear, Nose and Throat Diseases for Medical Students

William McKenzie, M.B., B. Chir. (Cantab.), F.R.C.S. (Eng.), surgeon, Royal National Throat, Nose and Ear Hospital. E. & S. Livingstone, Ltd., Edinburgh and London, 1953. The Williams & Wilkins Co., Baltimore. 260 pp. with index. \$5.50.

### Science and Man's Behavior

Trigant Burrow, M.D., Ph.D. Philosophical Library, New York, 1953. 564 pp. with index. \$6.

### Saving Children from Delinquency

D. H. Stott, Ph.D., research fellow, Institute of Education, University of Bristol. Philosophical Library Inc., New York, 1953. 266 pp. with index. \$4.75.

### On Aphasia

Dr. Sigmund Freud, privatdozent for neuropathology in the University of Vienna. Translation by E. Stengel, M.D. International Universities Press, Inc., New York, 1953. 105 pp. \$3.

### Medical Psychology

Paul Schilder, David Rapaport, translator and editor, Austen Riggs Center, Inc., Stockbridge, Mass. International Universities Press, Inc., New York, 1953. 428 pp. with index. \$7.50.

### Curious Creatures

Written and illustrated by Erna Plunner. Philosophical Library, New York, 1953. 256 pp. with index. \$4.75.

### Epilepsy and the Functional Anatomy of the Human Brain

Wilder Penfield, M.D., D. Sc., F.R.C.S., F.R.S.; Herbert Jasper, M.D., Ph.D. Eight color plates and 314 black and white illustrations. Little, Brown and Company, Boston, 1954. 896 pp. with index. \$16.

### An Approach to General Practice

R. J. F. H. Pinsent, M.A., M.D. (Cantab.), E. & S. Livingstone Ltd., Edinburgh and London, 1953. American distributors: The Williams & Wilkins Co., Baltimore. 166 pp. \$3.50.

## Abstracts and Excerpts

Dearing, W. Palmer. *New Orientation in the Teaching of Preventive Medicine*. "Public Health Reports," Vol. 68, No. 12:1147-1155, December 1953.

No system of medical science can solve all the health problems of the world today. Some diseases must be combatted by engineering and sanitary science, others respond only to changes in economic and social conditions.

An understanding of the social environment is imperative for the physician. He must understand the human mind and body and something of the spiritual nature of man, as well as the physical and social environment in which his patients live. The latter requirement means that there is need for new orientation in the teaching of pre-

ventive medicine. There can be no standard pattern for medical education that applies to all times and places. Yet faculty, students and practitioners of different societies have much to share with each other.

American society has changed in the last several decades, creating new health problems. Communities and family groups have become less stable, higher standards of living have been developed, education has become widely available, there has been an increase in leisure time and the pace of living and working has increased. The physician must change with the times. To avoid being relegated to the position of medical technician, doctors find it necessary to work with all

available facilities for community health.

American medical schools have been making drastic changes in curriculum in order to train better doctors. Innovations include the family advisor services, preceptorship programs and general practice clinics.

**General Practice as a Specialty**, (a panel discussion), "The Journal of the Student American Medical Association," Vol. 2, No. 9:49-52, December 1953.

Figures indicate a tremendous interest among undergraduates in the practice of general medicine. There is discussion of the need for a nationwide survey of the necessity for general practitioners, for the guidance of medical schools in planning curricula.

Facts regarding general practice in a small city, in a metropolitan area and in a small town are presented in an attempt to answer the questions: Just what do general practitioners do? What are their limitations? What type of training is needed? How long should the internship be? What services are most important?

Panel discussants include a practitioner in a city of 30,000, a practitioner from a metropolitan area and a physician from a town of 2,000 who practices rural medicine.

**Laird, William R.**, **On Classical Education of the Physician**, "Bulletin of the American College of Surgeons," Vol. 38, No. 6:383-386, November-December 1953.

Although the term "formal discipline" has fallen into some disrepute, the fact remains that discipline in any kind of faithful study strengthens the morale and mentality of the student. Such strength is of particular importance to the student of medicine. The importance of the humanities should not be underestimated. The professional man has particular need for them, in order that he may assume properly the position of community leadership that is expected. Such values as stability, prudence, integrity, understanding and a sound philosophy of life are aided by a knowledge of the classics and should never be bypassed in an attempt to "accelerate" the medical curriculum.

**Menninger, Karl**, **Psychiatry and Medicine**, "The Journal of the Student American Medical Association," Vol. 2, No. 8:28-32, November 1953.

Psychiatry, aside from its function as

a specialty, is a point of view in medicine today. From its beginnings, when most psychiatric patients were considered hopeless, it has developed to the extent that every physician who has any idea of treating the whole patient and not just a disease must take part in it. The problems facing the general practitioner in dealing with psychiatric illnesses can be avoided by his medical training.

"He must be taught a new concept of disease, one that really fits the clinical facts of life. He must learn that hate, ignorance, and prejudice can be as malignant as cancer or streptococci. Internal destructiveness always joins hands with external destructive agents, and only by treating them both, only by treating the whole person, can the physician successfully combat disease . . ."

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**Modeling a Human Brain**, "Look," Vol. 17, No. 23:58-59, November 17, 1953.

**New York University Post-Graduate Medical School**, "The Journal of the Student American Medical Association," Vol. 2, No. 9:44-46+, December 1953.

**Stalnaker, John M.**, **The Matching Plan Pays Off**, "Hospitals," Vol. 27, No. 12:62-66, December 1953.

# The Personnel Exchange

## Faculty Vacancies

• Roswell Park Memorial Institute (New York State Institute for Malignant Diseases) is completing an expansion program with the addition of a 516 bed hospital unit and generous research facilities. An active teaching program is carried on in association with the University of Buffalo Medical School. Staff positions in the departments of medicine, surgery, pathology and the basic sciences are open to individuals with investigative and teaching interests in the general field of malignancy. Reply to: George E. Moore, director, Roswell Park Memorial Institute, Buffalo 3, New York.

• Assistant resident in CLINICAL PATHOLOGY. Approved for entire training by College of American Pathologists; 1,000-bed teaching hospital; modern equipment; laboratory performs over 1,200 tests per day; research laboratories and facilities available; department has own teaching and research programs. Complete maintenance, including room, board, laundry and medical care, plus stipend of \$900 per year. Contact: director, department of clinical pathology and hospital laboratories, Medical College of Virginia, Richmond 19.

• PSYCHIATRIST: Desired for full-time position as university psychiatrist for student health services and as consultant to outpatient mental hygiene clinic and marriage counseling clinic. Prefer diplomate of American Board of Psychiatry or eligible, with training and experience in dynamic psychotherapy. Some teaching required. Salary open. Address: V-10.

• Board approved two-year residency available in thoracic surgery. University center; East. Requirements: three years approved training in general surgery. Immediate opening. Reply to: Address: V-12.

• PROFESSOR OF PREVENTIVE MEDICINE. Applications are invited for the position of professor of preventive medicine in the faculty of medicine, University of Ottawa, Canada. Requirements: M.D. with specialization in preventive medicine and preferably with teaching experience. Write full details to: V-13. Journal of Medical Education.

• The University of British Columbia Faculty of Medicine requires a TEACHING FELLOW in PSYCHIATRY for one year or 18 months beginning January 1, 1954. Stipend, \$2,400 per annum. Duties will be performed in psychiatric unit of Vancouver General Hospital. Address inquiries to: Dr. George A. Davidson, Dept. of Psychiatry, Faculty of Medicine, University of British Columbia, Vancouver, Can.

• BIOCHEMIST—NUTRITIONIST: Teaching and research position in department of biochemistry, southern university. Salary and rank are open and depend upon educational background, teaching experience and research activities. Reply should include personal history, complete bibliography and photo. Address: V-14.

• Physiologist: Combined department of

physiology and pharmacology. Rank and salary dependent upon qualifications. Write Dr. F. E. Kelsey, Chairman, Department of Physiology and Pharmacology, University of South Dakota Medical School, Vermillion, South Dakota.

## Personnel Available

• Position desired in medical school or university hospital by woman with M.S. in bacteriology. Three years experience teaching bacteriology, serology, parasitology and clinical microscopy to medical students and medical laboratory technicians. Excellent experience in writing and statistical interpretations in medical fields. Formerly in charge of university hospital bacteriology and serology department. Address: A-56.

• A position in PREVENTIVE MEDICINE and PUBLIC HEALTH with administrative responsibility desired. Age 45, married; two children. 13 years extensive experience in administrative medicine, including the teaching of public health and preventive medicine. Broad background in multiple areas of medical and hospital economics. References: Fellow, American Public Health Association; diplomate, American Board of Preventive Medicine and Public Health. Address: A-61.

• CHIEF X-RAY TECHNICIAN: White, male, 45 years. 20 years experience, 12 as chief of busy 20-employee department. Capable of assuming complete supervisory responsibility, teaching and general administration duties. Location desired outside New York area. Address: A-62.

• PATHOLOGIST: M.D. under 40, diplomate. Professor and chairman of department of pathology and chief of diagnostic services; distinguished academic career, varied experience, numerous publications; seeks post as full or associate professor with suitable responsibility and hospital laboratory directorship in progressive medical school. Available



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J. Cass, L. J. and Frederik, W. S.: Malt  
Soup Extract as a Bowel Content  
Modifier in Geriatric Constipation.  
Journal-Lancet, 73:414 (Oct.) 1953.

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able June 1954. Own department can be inspected by interested body. Reasons for change: overwork and poor financial return. Address: A-64

• **BIOCHEMIST:** Ph.D., 1952. Plasma protein fractionation, enzymes, blood coagulation, fibrinogen. Six publications on these topics. Electrophoresis. Five years laboratory teaching experience in medical and dental biochemistry food analysis, blood chemistry. Seeking teaching position with or without facilities for research. Address: A-65

• **Active researcher:** Member of many scientific organizations. Interest in fields of ENDOCRINE and CARDIOVASCULAR RESEARCH. Ten years research and six years teaching experience. Present position as associate professor in large medical school. Desires change of location. Numerous publications. Excellent recommendations. Minimum salary stipulated. Address: A-66

• **BACTERIOLOGIST:** Ph.D. Man. Age 27, married. Veteran. Present rank assistant professor. Would like teaching-research position in medical bacteriology, immunology or bacterial physiology. Teaching experience in liberal arts and medical schools. Prefer location in the west or northwest. Publications. References. Available September 1. Address: A-67

• **BIOCHEMIST:** Ph.D. Age 31. Married. B.S. chemistry, biology. Ph.D. biochemistry; minors: chemistry and microbiology. Publications. Three years graduate teaching assistant, two years post doctoral studies, biochemistry and nutrition. Research interests: vitamin and amino acid biochemistry. Desires teaching position in biochemistry with research opportunity or hospital laboratories with professional, financial advancement. Address: A-68

• **BIOCHEMIST:** Ph.D. 36. Associate professor with eight years teaching experience in medical biochemistry and three years teaching in immunology. Active research worker with approximately 30 publications in immunology, protein chemistry, enzymology, nutrition, clinical chemistry and analytical chemistry. Experience in teaching postgraduate medical biochemistry. Desires teaching and research position in a medical school or a full-time research appointment at a hospital or other medical research institution. Available at any time in the fall or winter of 1954. Address: A-69

• **PEDIATRICIAN:** Board eligible; single woman; 42. Protestant. A.B., M.S. and M.D. Extensive graduate training in hematology morphology and 2 years experience as marrow and blood morphologist in pediatric hematology. Teaching experience: university level-gross anatomy, 2 years; college level-health education, 3 years; high school level-biological science, 5 years. Medical practice: large university students' health service, 3

years; private practice, 1 year. 8 publications. Address: A-70

• **PHYSIOLOGIST:** Male, married. Teaching and research experience. Numerous publications. Ph. D. Background in organic chemistry and biochemistry. Research interests in mammalian and human physiology. Interested in full-time academic position. Address: A-71

• **PHARMACOLOGIST:** Man, 32. Family. B. S. pharmacy, M.S., Ph.D. pharmacology. Minors: biochemistry and physiology. Two years graduate assistant. One year E. I. Lilly fellow; for the second year National Institutes of Health predoctoral research fellow. Publications and research. Desires position with a medical school department of pharmacology. Time and financial aspects are of secondary importance. Interested particularly in a position that will provide a sound basis for future academic advancement. Available after June 1954. Address: A-72

• **UROLOGIST and SURGEON:** Age 49, active research worker. Experienced teacher in physiology and urology desires teaching in both subjects and research position in medical school. 42 published papers and lectures and one book. Position should be permanent. East or West coast preferred. Available immediately. Address: A-73

• **ANATOMIST:** Man. South American. Age 44. M.D. University of Paris. Languages: Spanish, French and English. Teaching experience in gross anatomy, 18 years. Head and professor of the department of anatomy since 1951. Publications. Educational awards. Seeking full-time position as professor or assistant professor of gross anatomy in any school but prefers a New England or West Coast medical school. Available: March 1, 1954. Address: A-74

• **MEDICAL and GENERAL ENTOMOLOGIST:** Ph.D., 1938. Man, age 42. Family. Associate professor in leading medical school with 18 years teaching and laboratory research experience, including fundamental and disease-transmission studies. Publications. Organizations. Editing. Desires change of location with permanent academic (undergraduate or graduate level). Research or other suitable position. Address: A-76

• **RESEARCHER:** Man. Age 35. Family. Research associate and assistant. Interested in university offering research opportunity connected with teaching pharmacology. Experience largely in research with some teaching. Available for position on short notice. Publications and references. Address: A-77

• **SURGEON:** 38. Seven years surgical training and teaching at the University of Goettingen, Germany. Experience in research and publications both in Europe and USA. Anticipating completion of American Board of Surgery requirements in June 1954. Wishes to resume

academic career. Special interest in surgical physiology. Address: A-78.

• PHYSIOLOGIST or BIO-PHYSICIST: Man, 31, married. M.S., Ph.D. Desires academic position with freedom of research, or research position in field of interest. Active researcher, many publications, special experience in radioactive isotope methods, bone mineral turnover, circulatory dynamics, burn-shock. One and one-half years predoctoral teaching experience. Broad education in biology and various fields of physiology. Address: A-79.

• BIOCHEMIST: Ph.D. 36. Associate professor in large medical college with distinguished record in research on peptides, amino acids, hormones and antibiotics. Has taught biochemistry in two medical colleges; elementary and advanced courses in university. Desires position in a medical college, preferably with opportunity to direct graduate students in biochemistry, in research institute or in university. Address: A-80.

• M.D., Dr. P. H. interested in teaching in medical or public health school. Fifteen years' experience includes general public health administration, industrial hygiene, epidemiology, immunology and basic and applied research; also some undergraduate and postgraduate teaching. Publications. Excellent references. Available on short notice. Address: A-81.

• PHYSIOLOGIST: Teaching position in a medical school starting in the fall of 1954. Has had five years in pediatrics, will have had two years in neurophysiological research. Age 28. Address: Anton N. Lethin Jr., Dept. of physiology, Yale University School of Medicine, 333 Cedar St., New Haven 11, Conn.

• Permanent position desired with opportunity for significant research with or without teaching. Ph.D. and national research council fellow with experience in iron uptake and phosphate metabolism of blood, biochemistry and physics of various radio isotopes, radiation effects, plant physiology, instrumentation and publications. Is adaptable to a variety of research and production problems. B.S. in economics with experience in statistics. Married and 37 years old. Address: A-82.

• PHYSIOLOGIST: Pharmacology and biochemistry minors. Male. Considerable experience in good teaching. Publications. Ph.D., member of several scientific societies; interested in full-time academic position. Time arranged when available. Address: A-83.

• PHYSIOLOGIST: Ph.D., specialized in endocrinology (undergraduate training in veterinary medicine). Prefer research position in endocrinology or physiology. Available Jan. 1, 1954. Address: A-84.

• BIOCHEMIST - HISTOCHEMIST: Ph.D. Man. Age 36, married, children. Would like permanent teaching-research position in histology, histochemistry, biochemistry. Publications in physiology, histochemistry, biochemistry. Available July 1, 1954. Address: A-85.

• ANATOMIST: Man, Ph.D. Several years teaching experience in gross anatomy, histology and embryology in medical and dental

schools; also teaching experience in many biological sciences in liberal arts college. Publications. Excellent references. Desires academic position at medical, dental or pharmacy school or liberal arts college where good teaching is considered important. Administrative duties welcome but not necessary. Now employed on medical school staff. Available on short notice. Address: A-86

• ZOOLOGIST - PARASITOLOGIST: Ph.D., age 31, married. Desires opportunity to earn M.D. degree by attending medical school part-time and teaching part-time. Prepared to assist in teaching parasitology, gross anatomy or histology plus several of the basic zoological courses. Five years teaching and research experience. Publications. Member of Sigma Xi and several other scientific societies. Has conducted personal research and directed graduate research in parasitology. Suitable liberal arts college will be considered. Address: A-87

• Gynecologist-Obstetrician: Age 31, White, Protestant. Completing University Hospital residency and M.M.Sc. in June. Teaching background. Immediate supervision of residency program. Desires full-time teaching association with opportunity for investigative physiology. Address: A-88.

• Physiologist: Ph.D., male, 33 years old. Well-trained in human physiology, biochemistry and anatomy. Seeks a position in a medical or dental school, where emphasis lies with the instruction of students, and research can be conducted at the discretion of the appointee. Address: A-89.

• Biochemist: Ph.D. 1950. Age 30, family. Three years graduate teaching assistant. Doctoral thesis on degradation of hemoglobin. Past three years research on relationship of sulfur compounds to metabolism of aromatic hydrocarbons. Experienced in use of radioactive isotopes. Four publications. Medical school teaching experience. Desires teaching position in biological chemistry. Address: A-90.

• PHARMACOLOGIST: Ph.D. age 28, married. Presently teaching at medical school. Research experience includes hormones, anti-convulsants and the use of radioactive isotopes. Seeks position in teaching or research with opportunity for obtaining M.D. degree. Address: A-91.

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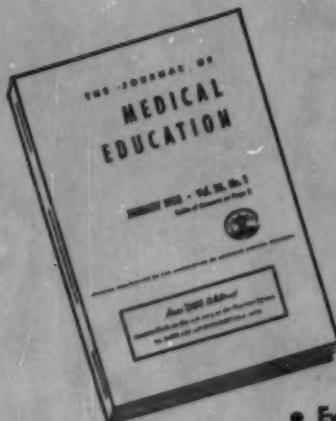
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